MANUAL NO. 0365-00H07-1001
GAME NO. 0H07

PRELIMINARY

Operating & Parts Manual

MARCH, 1988

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WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES. which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

USE ONLY GENUINE BALLY MIDWAY APPROVED REPLACEMENT PARTS.

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Printed In U.S.A.

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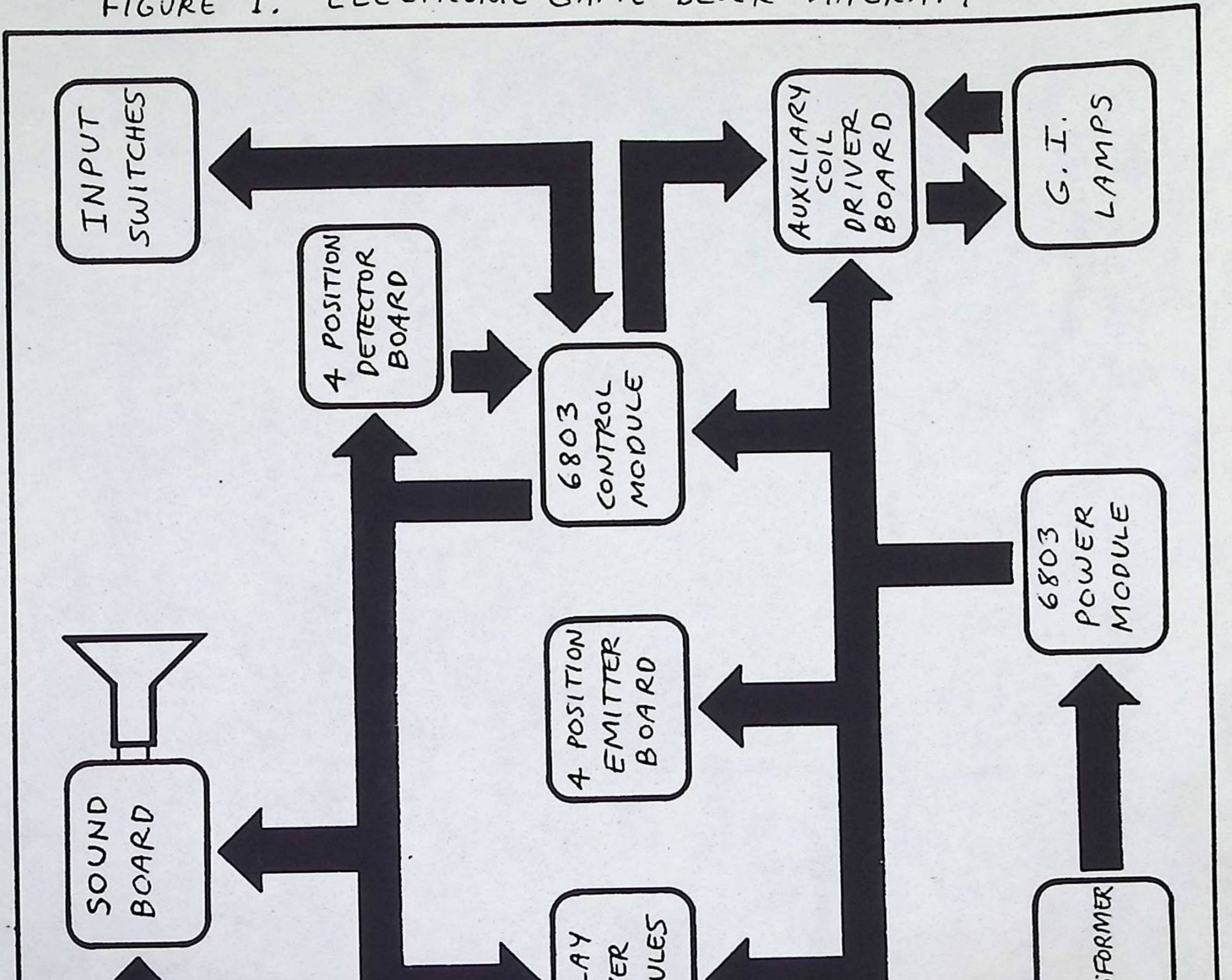

BACKBOX SAFETY WARNING

****
WARNING
****

TO AVOID INJURY TO OWNER/SERVICE PERSONNEL AND TO PREVENT DAMAGE TO THE MACHINE, THE BACK BOX MUST BE SECURED WITH THE BOLTS PROVIDED BEFORE THE MACHINE IS TRANSPORTED OR ACTIVATED.

M051-00365-A063

IMPORTANT NOTICE

FOUR PLAYFIELD BALLS MUST BE INSERTED IN THE OUTHOLE.

THIS GAME WILL NOT START IF THERE IS A BALL IN THE SHOOTER LANE IN THE GAME OVER MODE.

SHOOT
3
BALLS
TO LOAD
START
GATE

SECTION 1
GAME INSTALLATION

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INSTALLATION PROCEDURE

When the game is removed from the shipping carton, the following procedure is recommended for installing the game.

1—Carefully, remove the game from the shipping carton and set the game on a flat surface or on a Dolly

NOTICE: When installing this game with a Dolly or flat surface device, the Dolly Assist Stilt Assembly should be used. The procedure for use of assembly can be found on page 1-4, TRANSPORTING THE GAME BY DOLLY.

2—Remove the legs from their shipping carton and remove the four (4) Leg Adjusters (Levellers) from the Spare Parts Bag in the Coin Box. Next, assemble the Leg Adjusters to the legs and install the legs onto the cabinet.

3—Referring to BACK BOX POSITIONING, FIGURE A, on page 1-3, raise the Back Box to the upright (play) position. Secure the Back Box to the cabinet with the two (2) long 3/8" hold-down bolts and flat washers that are located in the Spare Parts Bag in the Coin Box.

4—Adjust the Leg Adjusters to level the cabinet so that the playfield is on a pitch angle of approximately 7°.

On all games, there are certain items that should be checked after shipment, and they are:

1—Check that all cable connectors are completely seated on all printed circuit board assemblies.

2—Check that all cables are clear of moving parts.

3—Check for wires that may have come loose during shipment.

4—Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of switches or lamp sockets.

5—Check coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may cause loss of contact.

6—Check that fuses are firmly seated and making good contact.

7—Check and adjust the plumb bob tilt on the left side of the Cabinet.

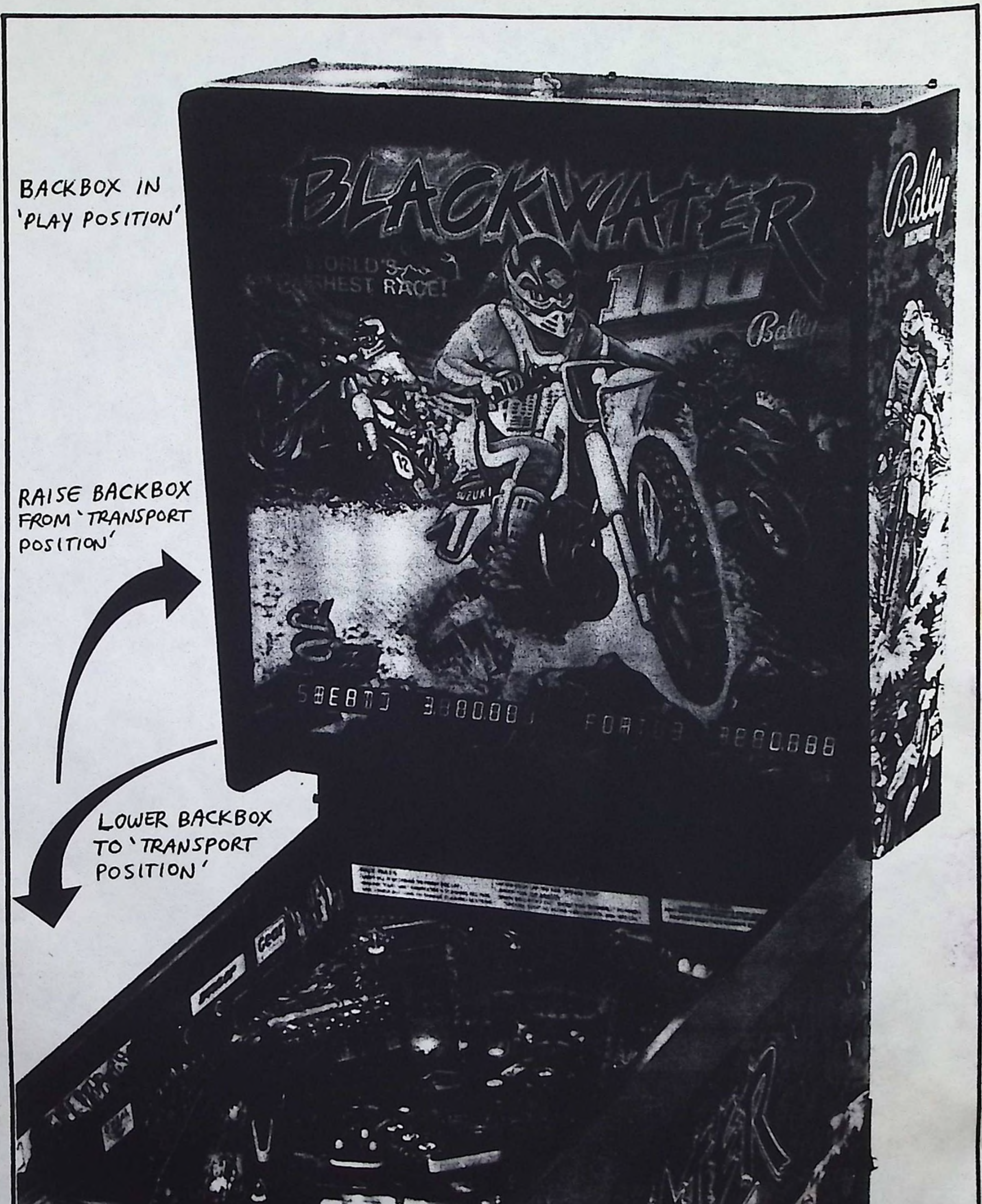
8—Check wiring of the plug on the transformer to correspond to location voltage. For reference, see Table A on the BACKBOX WIRING SCHEMATIC on page 10-6.

For 115 VAC, install jumper wires 2-8, 3-6 and 7-10.
For 120 VAC, install jumper wires 2-8, 4-6 and 7-11.
For 220 VAC, install jumper wires 4-8 and 7-9.
For 240 VAC, install jumper wires 4-8 and 7-11.

9—Place the four (4) game balls into the Playfield outhole.

10—Plug in the line cord.

FIGURE A. BACKBOX POSITIONING


BACKBOX IN 'PLAY POSITION'
RAISE BACKBOX FROM 'TRANSPORT POSITION'
LOWER BACKBOX TO 'TRANSPORT POSITION'
BLACKWATER 100
WORLD'S ...HEST RACE!
Bally
SUZUKI
12
1
2

TRANSPORTING THE GAME BY DOLLY

The following procedure is recommended by Bally-Midway when transporting this game. The purpose of this procedure is to ensure that, by using the Dolly-Assist Assembly, the game can be properly transported on a dolly. This game is shipped with the Dolly-Assist Stilt Assembly #A365-07250-0003 attached to the inside of the cabinet assembly.

PROCEDURE

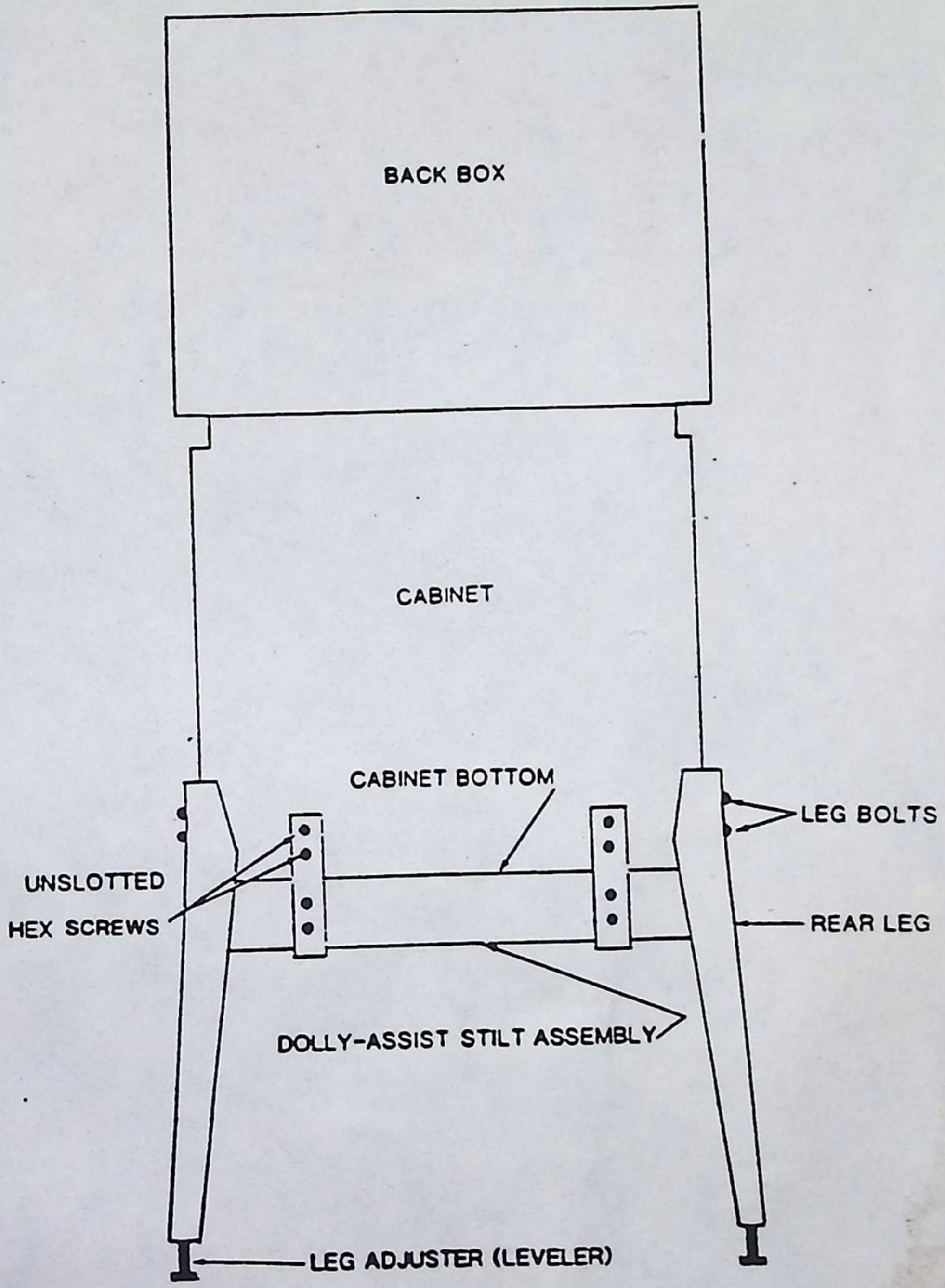
STEP 1—Unscrew the Dolly-Assist Stilt Assembly from inside the cabinet.

STEP 2—Remove the four (4) unslotted hex screws #0017-00101-1338 from the Spare Parts Bag Assembly.

STEP 3—Referring to FIGURE B, page 1-5, place the Dolly-Assist Stilt Assembly between the rear legs of the cabinet with the brackets pointing up toward the Back Box. Ensure that the Assembly is flush to the bottom of the cabinet before installing the four (4) unslotted hex screws.

NOTICE: Transporting this game with the legs removed and the Dolly-Assist Stilt Assembly installed will cause the Stilt Assembly brackets to bend as the game shifts forward.

FIGURE B. DOLLY-ASSIST STILT ASSEMBLY



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GENERAL GAME OPERATION

Move the ON/OFF switch (at the bottom right front corner of the cabinet) to the ON position. The game will [redacted] reset the drop targets. If any switch is closed when the game powers-up, the name of the closed switch is displayed for a brief period of time. After a short delay, GAME OVER on the display will indicate that the game is ready for play.

The game should accept coins and post (display) the approximate amount of credits. Pressing the Credit/Start button on the cabinet will cause the Multi-Ball Kicker Assembly to 'kick' the first ball of the Heat, of three (3) balls held in the Ball Trough, to the Shooter Lane. As this occurs, the game sound sequence is played to announce play-readiness.

Each time the Credit/Start Button is pressed, one (1) player is 'posted' and the remaining credits are reduced by one. Game play is initiated shortly after the player shoots three (3) consecutive balls to the Start Gate. The game awards all points earned by the player(s).

When the third and last ball of each Heat enters the outhole and then is 'kicked' by the top Mounted Kicker Assembly to the Multi-Ball Kicker Assembly and the Sensor P.C. Boards in the Ball Trough, the Bonus score is added to the total game score. The player-up and/or current Heat is advanced one (1) position. The Multi-Ball Kicker 'kicks' the first ball of the new Heat to the Shooter Lane to initiate play. This continues until each player has played the allowable number of Heats per game. After each player has played the allowable number of Heats per game, a random Match number appears in the display. If the Match number is the same as the last two (2) digits in a player's score, a free credit game is awarded.

Any extra balls won during the game are played immediately after the player's third and last ball enters the Outhole. The player-up and/or current Heat are not advanced before the game serves the extra ball for play.

If, at the end of the game, either the "High Score To Date" is beaten or if the score is over 10,000,000, free games will be awarded according to the HI SCORE AWARD register setting.

Tilting the game results in the loss of the ball in play and the remainder of the current Heat. Bonus points are not awarded, the flippers go dead, and none of the Playfield switches score. The purpose of the tilt penalty is to discourage the player from 'jostling' (shaking) the game in an attempt to prolong game play. Game action returns to normal after the Kicker 'kicks' the ball to the Multi-Ball Kicker, which then 'kicks' the ball to the Shooter Lane, beginning a new Heat.

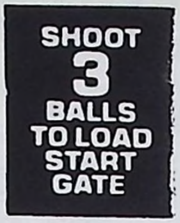

FIGURE A.
SHOOTER LANE
DECAL

BUY-IN FEATURE

The BUY-IN feature allows each player, at the conclusion of all active players' last Heat[1], the option of continuing the current Race[2] or ending the game. Each player is allowed only one (1) BUY-IN per game.

The BUY-IN feature can be adjusted by the Operator to select the number of BUY-IN Heats allowed for one (1) credit. To adjust the BUY-IN feature, press the Test Button to enter the Test Mode and select the GAME SETUP category. Next, select the register titled BUY-IN. When the register is set to zero (0), no BUY-IN Heats query will be offered. To select the number of BUY-IN Heats, refer to TABLE A - REGISTERS & OPTIONS on page 5-2.

The BUY-IN feature begins for each player (in turn) with the displayed message "RACE OVER UNLESS BUY-IN". Next, the BUY-IN time period of fifteen (15) seconds begins with information shown in both Displays. In the left Display, a countdown timer indicates the time remaining to make the BUY-IN decision. Also, in both Displays, a message repeats for fifteen (15) seconds detailing the number of Heats that can be bought for one (1) credit. Credits are awarded for coins inserted during the BUY-IN time period.

When the player chooses to BUY-IN, all of the game features carry-over from Heat-to-Heat as if there were simply additional Heats left to play. Pressing the Credit/Start push-button with at least one (1) credit present during the BUY-IN time period allows that player to keep racing. Pressing either lower cabinet push-button indicates that the player chooses to end the race.

In the multiple-player situation, players who do not BUY-IN are spectators while the others continue to play. All players will receive their HISCORE SPECIAL, MATCH SPECIAL and PLAYFIELD SPECIAL awards and, also, Select Initials entry opportunities when the last active player finishes the game.

NOTES:

[1] HEAT: A three (3) ball start which gives the player an opportunity to complete Sections, Laps and the Race.

[2] RACE: Completing three (3) Laps[3] completes the Race.

[3] LAP: Completing all eight (8) Sections on the Map completes a Lap.

SELECT INITIALS ENTRY FEATURE

When, at the end of the game, the player's final game score is greater than the HIGH SCORE TO DATE, the HISCORE SPECIAL is awarded along with other specials earned during game play. The player is also given the opportunity to select name initials and enter them on the isplay. As a result of entering them, the player's initials, along with the score, wi appear on the Display during the Attract Mode whenever the lower left cabinet pushbutton is pressed. This continues until four (4) higher scores have been earned.

TABLE A. USES OF THE LOWER RIGHT AND THE LOWER LEFT CABINET PUSH-BUTTONS

THIS INFORMATION IS NOT AVAILABLE AT THIS TIME

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INTRODUCTION

The system in this game provides a large amount of easily accessible information to the Operator and it also communicates with the player through the use of alpha-numerics and sound effects.

The system is designed to be "user friendly" to the Operator. It can be used without a manual. This will come to light the moment you press the Self-Test button and the displays come to life with their messages of assistance. You can now change difficulty levels, awards, threshold level settings and monitor specific special awards, replay percent and income just by reading what is displayed and by using three (3) cabinet push buttons. The categories of registers are described with useful titles such as GAME SET-UP or GAME CHECK-UP.

If you've ever changed the replay threshold levels on a machine and you forgot to change the replay card because you were distracted by a customer, listen to this: "It will never happen again!" When using this system, if you want to change the first replay threshold level to 2,000,000 in the LEVEL 1 SCORE register, the corresponding message; FIRST REPLAY AT 2,000,000 will be displayed at Game Over.

All of the information that follows in this section should provide you with an understanding of how to access and change the various game registers in order to tailor or test this game. But, before reading this information, Bally-Midway recommends that you first read through all of TABLE A—REGISTERS & OPTIONS found on pages 5-1 through 5-3.

GAME REGISTERS ACCESS & MODIFICATION INSTRUCTIONS

1. Enter the Test Mode by pressing the Test button inside the front door. The category GAME STATUS will appear on the display.

2. To select a different category, use the lower right cabinet button on the front cabinet to advance to that category. If the category is passed by, press the lower left cabinet button to back-up to the previous category.

3. When the selected category appears on the display, press the Credit button to open the category and enter its directory. The first register in a directory of registers will appear on the display.

4. To select a different register, use either lower cabinet button to step to that register. Using the lower right cabinet button allows you to step to the end of the register directory, and out to the same category. The bottom SELECT INITIALS button allows you to back-up in the same manner.

   With the exception of the GAME CHECK-UP category and the HELP READ ME HELP category, all other categories in the Test Mode contain registers with optional values[1]. Included are registers with values that can only be reset to zero (0).

5. When the selected register appears on the display and you want to change its value[1].

   A. Press the Credit button to open the register. A flashing value appears on the display to the left of the register name and its existing value[1].

   B. Use the lower cabinet buttons, as shown in Step 2 above, to step to the desired new flashing register value.

   C. Lock-in the selected new register value by pressing the Credit/Start button. The flashing value shifts to the left and becomes the new fixed register value.

---

[1] Each register in the COIN SET-UP category contains three (3) optional values instead of one (1) optional value as in the other registers. Each of the three values can be changed sequentially (from left to right) by following Steps 5A, 5B, and 5C above. However, due to lack of space on the display, each new flashing value will replace each existing value on the display before the new value is locked-in. For additional information, see pages 5-2

6. To make further changes to registers in the selected category, repeat Step #4 on page 3-2 & Step #5 above. To close the directory and remain in the same category, repeat Step #4 on page 3-2 only. To exit the Test Mode, press the Test button.

DIAGNOSTIC TEST REGISTER ACCESS INSTRUCTIONS

The GAME CHECK-UP category in the Test Mode contains a directory of Diagnostic Test registers (except for the PROGRAM VERSION register which displays EPROM program version information). Each test is performed as follows:

A. Enter the directory and select the register to be displayed by using the Credit /Start button and the buttons as shown in Steps 1 through 4 on page 3-2.

B. When the selected register appears in the display, press the Credit /Start button to open the register and begin the test. From this point on, until you exit from the directory, the lower cabinet buttons are used only in stepping through certain register test sequences.

C. When the test is completed in any test register, press the Credit /Start button to advance to the next register. Press the Credit /Start button again to open that register. Repeating this procedure will advance you to the end of the directory. The last register in the directory is the SWITCH TEST.

D. When finished with the SWITCH TEST, exit from the register and the directory by holding in the Credit button for one full second.

E. To exit the Test Mode, press the Test button.

1. Located in the GAME CHECK-UP category of the Test Mode are the following registers:

A. ALL LAMPS
B. SINGLE LAMPS
C. DISPLAY TEST
D. COIL TEST
E. PROGRAM VERSION
F. SWITCH TEST

These are all Diagnostic Test registers with the exception of item E, the PROGRAM VERSION register, which displays only EPROM program version information. The application of each Diagnostic Test register is explained in detail in SECTION 9—TROUBLESHOOTING ON LOCATION. An abbreviated description of each of these registers is given in the GAME CHECK-UP category of TABLE A—REGISTERS & OPTIONS on page 5-4.

2. Diagnostic Test in registers are performed as follows:

A. Enter the GAME CHECK-UP category's directory and select the register to be displayed by using the Credit button and either of the lower cabinet buttons as shown in Steps 1 through 4 on page 3-2.

B. When the selected register appears in the display, press the Credit button to open the register and begn the test(s). From this point on, until you exit from the directory, both lower cabinet buttons are used only in stepping through certain register test sequences.

C. When the test is completed in any test register, (except the SWITCH TEST register) press the Credit button again to exit from that register and to enter the next register. Repeating this procedure will advance you to the end of the directory. The last register in the directory is the SWITCH TEST.

NOTE: Exit from the Test Mode AT ANY TIME by pressing the Test button.

D. When finished with the SWITCH TEST, exit from the register and the directory by holding in the Credit button for one full second or exit from the Test Mode by pressing the Test button.

NOTE: While performing the series of tests within the SINGLE LAMPS register or the SOLENOID TEST register, holding the lower right cabinet button will continuously cycle (advance) the display from one driver to the next. Holding in the lower left cabinet button will continuously cycle the display backwards from one driver to the previous driver.

3. SECTION 9—TROUBLESHOOTING ON LOCATION contains specific Diagnostic Test procedure information for the following test registers.

   A. For ALL LAMPS, see page 9-3.
   B. For SINGLE LAMPS, see page 9-3.
   C. For DISPLAY TEST, see pages 9-4 and 9-5.
   D. For COIL TEST, see pages 9-5 through 9-8.
   E. For SWITCH TEST, see pages 9-8 and 9-9.

SELF-PERCENTAGING

1. The term Self-Percentaging refers to the game's ability to automatically adjust the score level of the First Replay Threshold to attain a desired replay percentage, also known as the TARGET PERCENT. For additional information, see Step #9 on page 3-5.

2. Self-Percentaging also applies to extra balls, when used instead of replays.

3. Initially a minimum of 200 games must be played before the Self-Percentaging Process goes into effect. It then monitors the current replay percentage of the First Replay Threshold only and makes any adjustment, if necessary, every 50 games.

4. The Self-Percentaging Process will automatically adjust the score level of the First Replay Threshold only. It makes NO adjustments to other Award features in the game.

5. Located within the SCORING STATUS category of your games Test Mode are the following registers:

   A. LEVEL 1 SCORE
   B. LEVEL 2 SCORE
   C. LEVEL 3 SCORE
   D. HIGHEST SCORE
   E. TIMES HIGH SCORE BEATEN
   F. LEVEL 1 PERCENT
   G. LEVEL 2 PERCENT
   H. LEVEL 3 PERCENT
   I. TARGET PERCENT

   Each of these registers are explained in detail further in this section.

6. To set or check the current score level of the First Replay Threshold:

   A. Step through the Test Mode categories until you reach SCORING STATUS.

   B. Press the Credit button to select this category and enter its directory.

   C. The first register displayed in the directory will be LEVEL 1 SCORE.

   LEVEL 1 SCORE—This register displays the current score level of the First Replay Threshold.

   D. Use either lower cabinet button to select any value from 0 to 9,900,000. The LEVEL 1 SCORE value can only be changed in steps of 100,000 points.

   E. Press the Credit /Start button to set the desired score level.

   F. Use either lower cabinet button to exit the directory or press the Test button to exit the Test Mode.

7. To set or check the current score level of the Second Replay Threshold, repeat Step #6 above, but in Step 6.C, use the lower right cabinet button to select the register titled LEVEL 2 SCORE.

8. To set or check the current score level of the Third Replay Threshold, repeat Step #6 on page 3-4, but in Step 6.C, use the lower right cabinet button to select the register titled LEVEL 3 SCORE.

9. To adjust the desired Replay Percentage for the First Replay Threshold:

   A. Step through the games Test Mode until you reach the category titled SCORING STATUS.

   B. Press the Credit /Start button to select this category, and enter its directory.

   C. Use either lower cabinet button to select the TARGET PERCENT register in the directory.

   TARGET PERCENT—This register displays the desired percentage of replays to be awarded for reaching the First Replay Threshold Level.

   D. For example, if you want the First Replay Threshold Level to award a replay in 15% of the games played, use either lower cabinet button to select 15% and then press the Credit button to set the percentage. The register will then display 15% as your goal or TARGET PERCENT. 15-

   E. Use either lower cabinet button to exit the directory or press the Test button to exit the Test Mode.

   IMPORTANT NOTES:

   When the value of this register is set at 0%, the Self-Percentaging feature, as defined in Step 1 on page 3-4, is disabled.

   This register automatically defaults to a Factory Setting of 10%, when the FACTORY SETTING register, in the GAME SET-UP category, is disabled.

10. The Total Replay Percentage will be 10% or 15% higher with the addition of Match, Special and High Score To Date credits.

11. To manually check the current replay percentage of the First Replay Threshold Level, only:

   A. Step through your game's Test Mode with either lower cabinet button until you reach the category titled SCORING STATUS.

   B. Press the Credit /Start button to select this category, and enter its directory.

   C. Use either lower cabinet button to select the register in the directory titled LEVEL 1 PERCENT.

   LEVEL 1 PERCENT—The value displayed in this register is the percentage of replays awarded for reaching the First Replay Threshold Level. Progress of the Self-Percentaging Process may be monitored by comparing the current value displayed in this register with the TARGET PERCENT.

   D. Use either lower cabinet button to exit the directory or press the Test button to exit the Test Mode.

12. The size of adjustment, made by the Self-Percentaging Process to the score level of the First Replay Threshold, is determined by the current difference between the TARGET PERCENT (entered by the Operator) and the actual percentage of replays awarded for reaching the First Replay Threshold.

   A. A difference of 10% or more will result in a 10% adjustment.

   B. A difference equal to or greater than 5%, but less than 10%, will result in a 5% adjustment.

   C. A difference of less than 5% will result in a 1% adjustment.

13. To check the current score level of the First Replay Threshold, see Step 6 on page 3-4.

14. When the CLEAR ACCOUNT register is enabled, the Self-Percentaging Process is re-initiated.

15. The Second Replay Threshold Level and the Third Threshold Level are not affected in any way by the Self-Percentaging Process.

16. To check the current replay percent of the Second Replay Threshold Level, only, repeat Step 11 on page 3-5, and use either lower cabinet buttons to select the register titled LEVEL 2 PERCENT.

17. To check the current replay percent of the Third Replay Threshold Level, only, repeat Step 11 on page 3-5, and use either one of the lower cabinet button to select the register titled LEVEL 3 PERCENT.

18. To adjust the HIGH SCORE TO DATE Level at which a replay (or replays) is awarded:

    A. Step through the game's Test Mode until you reach the category titled SCORING STATUS.

    B. Press the Credit/Start button to select this category and enter its directory.

    C. Use either lower cabinet button to select the HIGHEST SCORE register in the directory.

    HIGHEST SCORE—This register displays the High Score To Date for which the replay level is set.

    D. Use either lower cabinet button to select any value from 0 to 990,000. The HIGHEST SCORE register value can only be changed in steps of 100,000 points.

    E. Press the Credit/Start button to set the desired score level.

    F. Use either lower cabinet button to exit the directory or press the Test button to exit the Test Mode.

19. To check the number of times the HIGH SCORE TO DATE Level was exceeded:

    A. Step through the game's Test Mode until you reach the category titled SCORING STATUS.

    B. Press the Credit/Start button to select this category and enter its directory.

    C. Use either lower cabinet button to select the HIGHEST SCORE register in the directory.

    TIMES H S BEATEN —This register displays the number of times the HIGH SCORE TO DATE Level was exceeded. This information aids the Operator in deciding at what point level the High Score To Date will be adjusted to in the HIGHEST SCORE register. For additional information, see Step 18 above.

    D. Use either lower cabinet button to select any value from 0 to 9,900,000. The HIGHEST SCORE register value can be changed only in steps of 100,000 points. .

    E. Press the Credit/Start button to set the desired score level.

    F. Use either lower cabinet button to exit the directory or press the Test switch to exit the Test Mode.

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INTRODUCTION

BLACKWATER 100 is the World's toughest race in which the player (motorcycle racer) races against the course and other players. When the player completes all eight SECTIONS the first time, LAP 1 will be completed. Completing all three (3) LAP's completes the ace. Each Race consist of an optional number of Heats that is Operator selectable.

GAME FEATURES

START FEATURE
START BONUS POINTS
SECTIONS
FAST LINE
SPECIAL TEST
EJECT (SAUCER) HOLES
BONUS MULTIPLIER
PLAYFIELD MULTIPLIER
SAVE IT
SPECIAL
SLING SHOTS

START FEATURE

When the first ball enters the shooter lane, the Red (ready) lamp flashes behind the START GATE. When the player shoots the first ball to the START GATE in the upper right-hand corner of the Playfield, the second ball enters the shooter lane. After the second ball enters the shooter lane and is shot to the START GATE, the third ball enters the shooter lane. To start the ace, the player must shoot the third ball to the START GATE.

When all three (3) balls are at the START GATE, the Start Lamp Sequence begins. Following is the Start Lamp Sequence pattern.

A. The Start Red (ready) lamp is flashing when the first and second balls are shot to the START GATE.
B. The Start Red (ready) lamp stops flashing and turns on continuously for a period of time, and then goes out.
C. The Start Yellow (set) lamp comes on for a period of time and then goes out.
D. The Start Green (go) lamp comes on for a period of time.

TABLE A– START LAMP SEQUENCE

BALL SEQUENCE	LAMPS		
	RED	YELLOW	GREEN
1ST BALL AT START GATE	ON	OFF	OFF
2ND BALL AT START GATE	ON	OFF	OFF
3RD BALL AT START GATE	OFF	ON	OFF
3RD BALL AT START GATE	OFF	OFF	ON

When the Green lamp comes on, the player can press either the lower right or lower left cabinet push-button:, below the flipper push-buttons, to lower the START GATE and start the Race. If the player does not press either push-button, to start the Race, the START GATE will automatically lower. When the Race starts, the game will start in 3-ball Multi-Ball Play.

The Green (go) lamp is the signal to the player to start the Race. Also, the player's reaction time to pressing either push-button, determines the START BONUS point value.

START BONUS POINTS

The amount of time from when the Green (go) lamp comes on to when either one of the lower cabinet push-buttons (start buttons) is pressed to start the race, determines the START BONUS point value. The faster the player presses the start push-buttons when the Green lamp is on, the more points the player will be awarded when the Race begins.
START BONUS points are awarded in increments of 10,000 points, starting at 100,000 points. When the player presses the start button the moment the Green lamp comes on, the player is awarded a Hole Shot valued at 250,000 points. However, if the player does not press the start button when the Green lamp comes on, after a period of time, the START GATE will automatically lower and the Race will begin, and the player will not be awarded any START BONUS points.

SECTIONS

The game consists of eight (8) Sections that must be completed by the player to finish one (1) race Lap. Three (3) Laps must be completed to complete the race. The Sections are located at various locations on the Playfield and Rear Platform. The Section lamps are indicated by a Map in the center of the Playfield between the slingshots.

There are four (4) Sections on the Rear Platform titled BOG, DOWNHILL, CLIFF and ROCKS. The remaining four (4) Sections are on the Playfield and they are titled HILL CLIMB, RAPIDS, HWY93 (HIGHWAY 93) JUMP and SWAMP. When the player completes any of the Sections, 50,000 points is awarded when the Section lamp is not flashing and 100,000 points when the lamp is flashing (W/F).

BOG SECTION (Rear Platform, Bottom Left)

When operated, the three (3) Green bull's-eye targets light BIG, BAD and BOG lamps. When all three (3) lamps are lit, the BOG lamp lights in the Map. Each bull's-eye target scores 2,000 points when the lamps are not flashing and scores 5,000 points when the lamps are flashing (W/F).

DOWNHILL SECTION (Rear Platform, Top Left)

One shot to the ramp gate on the Rear Platform upper left corner, completes this Section and also the DOWNHILL lamp [redacted] in the Map. The ramp gate scores 50,000 points when the Section lamp is not flashing and scores 100,000 points when the lamp is flashing (W/F).

CLIFF-HANGER SECTION (Rear Platform, Rear Upper Cliff)

One shot to the Cliff-Hanger switch on the Rear Platform completes this Section and also the CLIFF-HANGER lamp [redacted] in the Map. The Cliff-Hanger switch scores 25,000 points when the Section lamp is not flashing and scores 50,000 points when the lamp is flashing (W/F).

ROCKS SECTION (Rear Platform, Top Right)

When operated, the three (3) Yellow bull's-eye targets, which are elevated above the ROCKS, light MEAN, MOON, and ROCKS lamps. When these three (3) lamps are lit, the ROCKS Section lamp lights in the Map. Each bull's-eye target scores 2,000 points when the lamps are not flashing and scores 5,000 when the lamps are flashing (W/F).

HILL CLIMB SECTION (Playfield, Top Left Ramp)

One shot to the ramp gate at the top of the hill completes this Section and lights the HILL CLIMB lamp in the Map. The ramp gate scores 25,000 points when the Section lamp is not flashing and scores 50,000 points when the lamps is flashing (W/F).

RAPIDS SECTION (Playfield, Below Hill Climb Section)

When operated, the four (4) Blue bull's-eye targets light COLD, WET, ROCK and RAPIDS lamps. When these four (4) lamps are lit, the RAPIDS Section lamp lights in the Map. Each bull's-eye target scores 2,000 points when the lamps are not flashing and scores 5,000 points when the lamps are flashing (W/F).

HWY93 (HIGHWAY 93) SECTION (Playfield, Right Ramp To Rear Platform)

This is a 'jump' ramp shot on the right side of the Playfield. One shot to the TOLL GATE completes this Section and lights the HWY93 Section lamp in the Map. The TOLL GATE scores 25,000 points when the Section lamp is not flashing and scores 50,000 points when the lamp is flashing (W/F).

SWAMP SECTION (Playfield, Center)

This Section consists of five (5) side-by-side drop targets in the center of the Playfield. In front of the drop targets are five (5) lamps titled NEVER, ENDIN, BIKE, SUCKIN and SWAMP. Each time all five (5) drop targets are knocked down, one of the lamps will light until all of the lamps are lit. When all five (5) lamps are lit, the SWAMP lamp lights in the Map. Each drop target scores 2,000 points when the lamps are not flashing and scores 5,000 points when the lamps are flashing (W/F).

TABLE B - SWAMP DROP TARGET LAMP SEQUENCE

ALL DROP TARGETS KNOCKED DOWN SEQUENCE	SWAMP LAMP LIGHTS	SWAMP SECTION MAP LAMP	
		SCORE WHEN NOT FLASHING	SCORE WHEN FLASHING.
1ST TIME ALL TARGETS DOWN	NEVER	2,000 POINTS	5,000 POINTS
2ND TIME ALL TARGETS DOWN	ENDIN	2,000 POINTS	5,000 POINTS
3RD TIME ALL TARGETS DOWN	BIKE	2,000 POINTS	5,000 POINTS
4TH TIME ALL TARGETS DOWN	SUCKIN	2,000 POINTS	5,000 POINTS
5TH TIME ALL TARGETS DOWN	SWAMP	2,000 POINTS	5,000 POINTS
		100,000 POINTS	50,000 POINTS

FAST LINE. (Front Platform/ Bottom Arch)

Operating the FASTLINE switch will complete any flashing Section & score an additional 25,000 points. The player can select any flashing Section in the Map with either the lower left or the lower right cabinet push-button. Completing each Section adds 10,000 points to the Bonus whether the Section lamp is flashing or is not flashing. All Bonus points are collected when the third and last ball in the Heat enters the outhole.

SPECIAL TEST (Rear Platform)

During Multi-Ball Play or single ball play, completing LAP 1 or LAP 2 qualifies the Top Eject (Saucer) Hole to START SPECIAL TEST (however, completing LAP 3 completes the Race with no opportunity to START SPECIAL TEST). The START SPECIAL TEST WHEN FLASHING lamp, on the Rear Platform, flashes ON. The initial SPECIAL TEST BONUS value of one million (1,000,000) points will appear in the Display. From this time until the SPECIAL TEST begins, all game points earned will be added to the player's game score and, also, added to the player's SPECIAL TEST BONUS.

When the ball is shot into the Top Eject (Saucer) Hole on the Rear Platform, during single ball play while the START SPECIAL TEST WHEN FLASHING lamp is flashing, it will be 'kicked' (ejected) immediately and the SPECIAL TEST will begin. However, during Multi-Ball Play, the ball will not be 'kicked' (ejected) from the Top Eject (Saucer) Hole until the other two (2) balls have drained through the outhole. Then the SPECIAL TEST will begin.

At the moment the ball is 'kicked' (ejected) from the Eject (Saucer) Hole, a timer appears in the left Display and begins to count down. The DOWNHILL Section area will also become animated with bright flashing lamps. To finish the SPECIAL TEST, The player must make the DOWNHILL shot and then use then use the Front Platform (bottom arch) flipper to shoot the ball across the Front Platform to the Right Eject (Saucer) Hole on the Playfield (operating the FAST LINE switch is not required).

If the SPECIAL TEST is finished before the end of the time limit, the player will earn the SPECIAL TEST BONUS and a SPECIAL. The SPECIAL TEST BONUS value will be collected and game play will continue.

EJECT (SAUCER) HOLES (Playfield & Rear Platform)

During Multi-Ball Play, when a ball is shot into the Top Eject (Saucer) Hole or the Right Eject (Saucer) Hole, it will be held for a period of time to give the player a short 'break' from Multi-Ball Play. But during single ball play, the ball will be kicked (ejected) immediately back into play. Each HOLD W/F lamp flashes continuously during Multi-Ball Play except during the period of time the ball is held in the lamp's corresponding Eject (Saucer) Hole.

During single ball play, both HOLD W/F lamps will remain unlit. However, when a ball is shot into either Eject (Saucer) Hole, the 25 W/LIT lamp is lit and will remain lit until the end of the Heat.

While its HOLD W/F lamp is flashing during Multi-Ball Play, an Eject (Saucer) Hole shot scores 5,000 points. During single ball play, with both HOLD W/F lamps and both 25K W/LIT lamps not lit, an Eject (Saucer) Hole shot scores 5,000 points. However, if its 25K W/LIT lamp is lit, an Eject (Saucer) Hole shot scores 25,000 points.

Referring to the GAME SET-UP category in TABLE A - REGISTERS & OPTIONS on page 5-2, the GAME OPTIONS register can be set for a particular game difficulty level which will affect the period of time the ball is held in either Eject (Saucer) Hole as indicated in Table C, below.

TABLE C - GAME OPTIONS REGISTER SETTINGS: TOP SAUCER & RIGHT SAUCER HOLD TIMER SETTINGS

DIFFICULTY LEVEL SETTING	XX EASY	X EASY	EASY	MEDIUM[1]	HARD	X HARD	XX HARD
SAUCER HOLD TIME[2] IN SECONDS	34	30	26	22	18	14	10

1 FACTORY RECOMMENDED SETTING

2 THE BALL IS HELD ONLY DURING MULTI-BALL PLAY.

BONUS MULTIPLIER (Rear Platform)

The BONUS MULTIPLIER value is increased by shooting the ball through the Top Left Loop, using the Upper Right Flipper, while the left ADVANCE BONUS X AND 100K W/F lamp is briefly flashing or by shooting the ball through the Top Right Loop, using the Upper Left Flipper, while the right ADVANCE BONUS X AND 100K W/F lamp is briefly flashing. When no lamp is flashing, completing the Top Left Loop or the Top Right Loop (the ball operates the Loop's rollover swith) scores 3,000 points. When either lamp is flashing, completing its corresponding Loop scores 100,000 points and advances the BONUS MULTIPLIER value as shown in Table D, below.

To qualify either ADVANCE BONUS MULTIPLIER shot, completing either Loop will flash ON the opposite ADVANCE BONUS X AND 100K lamp. The BONUS MULTIPLIER can be advanced to a maximum value of 4X.

TABLE D - BONUS MULTIPLIER AWARDS

TOP LEFT LOOP OR TOP RIGHT LOOP COMPLETION	'ADVANCE BONUS X AND 100K W/F' LAMP [1]	TOP LEFT LOOP OR TOP RIGHT LOOP ROLLOVER SWITCH SCORE	BONUS MULTIPLIER LAMPS		
			2X	3X	4X
1ST TIME	OFF	3,000 POINTS	OFF	OFF	OFF
2ND TIME	FLASHES ON	100,000 POINTS	ON	OFF	OFF
3ND TIME	FLASHES ON	100,000 POINTS	OFF	ON	OFF
4TH TIME	FLASHES ON	100,000 POINTS	OFF	OFF	ON

[1] THIS LAMP IS LOCATED IN FRONT OF THE ENTRANCE TO THE LOOP BEING COMPLETED.

Referring to the GAME SET-UP category in Table A. - REGISTERS. & OPTIONS on page 5-2, the GAME OPTIONS register can be set for a particular game difficulty level which will affect the BONUS MULTIPLIER feature as indicated in Table E, below.

TABLE E - GAME OPTIONS REGISTER SETTINGS:
BONUS MULTIPLIER RESET

DIFFICULTY LEVEL SETTING	XX EASY	X EASY	EASY	MEDIUM[1]	HARD	X HARD	XX HARD
RESET BONUS MULTIPLIER FROM HEAT-TO-HEAT	NO	NO	NO	NO	NO	YES	YES
CARRY OVER PLAYFIELD MULTIPLIER FROM HEAT-TO-HEAT	YES	YES	YES	YES	YES	NO	NO

[1] FACTORY RECOMMENDED SETTING.

PLAYFIELD MULTIPLIER (Front Platform / Bottom Arch)

The four (4) blue bull's-eye targets on the Front Platform Assembly spell R-A-I-N. Every time R-A-I-N is completed, the PLAYFIELD MULTIPLIER advances one value until a maximum value of 4X is reached as shown in Table F, below. Operating each target switch in R-A-I-N awards 5,000 points whether the target lamp is lit or not lit. Completing R-A-I-N awards an additional 50,000 points.

TABLE F - PLAYFIELD MULTIPLIER LAMP SEQUENCE

R-A-I-N TARGETS COMPLETION	GAME POINTS SCORED	PLAYFIELD MULTIPLIER LAMPS		
		2X	3X	4X
NONE	NONE	OFF	OFF	OFF
1ST TIME	50,000	ON	OFF	OFF
2ND TIME	50,000	OFF	ON	OFF
3RD TIME	50,000	OFF	OFF	ON

Referring to the GAME SET-UP category in Table A.—REGISTERS & OPTIONS on page 5-2, the GAME OPTIONS register can be set for a particular game difficulty level which affects the PLAYFIELD MULTIPLIER feature as indicated in Table G, below.

TABLE G - GAME OPTIONS REGISTER SETTINGS:
PLAYFIELD MULTIPLIER RESET

DIFFICULTY LEVEL SETTING	XX EASY	X EASY	EASY	MEDIUM[1]	HARD	X HARD	XX HARD
RESET PLAYFIELD MULTIPLIER FROM HEAT-TO-HEAT	NO	NO	NO	YES	YES	YES	YES
CARRY OVER PLAYFIELD MULTIPLIER FROM HEAT-TO-HEAT	YES	YES	YES	NO	NO	NO	NO

[1] FACTORY RECOMMENED SETTING

SAVE IT (Playfield, Left & Right Outlanes)

The SAVE IT feature is similiar to an extra ball feature. When the SAVE IT W/F lamp (each one is located above either outlane) is flashing and the ball enter that outlane and operates the lane's rollover switch, the player is awarded another ball to continue playing the same Heat. When this occurs, the player does not get another Race Start; however, the ball, that the player shoots will roll over the START-GATE into play.

The SAVE IT feature is qualified by lighting the SAVE IT W/F (flashes only), located above either outlane, when shooting the ball through the SWAMP Loop as indicated in Table H, below. When SAVE IT is qualified at either outlane, it can be moved to the other outlane by pressing either the right or the left lower cabinet push-button.

TABLE H - SWAMP LOOP AWARDS & LAMP SEQUENCE

SWAMP LOOP COMPLETION[1]	SWAMP LOOP LAMPS[1]				SAVE IT W/F LAMP[1]	GAME POINTS SCORED
	5K W/ FLASHING	10K/W FLASHING	25K W/ FLASHING	50K W/ FLASHING		
NONE	FLASHING	OFF	OFF	OFF	OFF	NONE
1ST TIME	ON	FLASHING	OFF	OFF	OFF	5,000
2ND TIME	ON	ON	FLASHING	OFF	OFF	10,000
3RD TIME	ON	ON	ON	FLASHING	OFF	25,000
4TH TIME	ON	ON	ON	FLASHING	FLASHING	NONE
5TH TIME	FLASHING	OFF	OFF	FLASHING	FLASHING	50,000
6TH TIME	ON	FLASHING	OFF	FLASHING	FLASHING	5,000
7TH TIME	ON	ON	FLASHING	FLASHING	FLASHING	10,000
8TH TIME	ON	ON	ON	FLASHING	FLASHING	25,000
9TH TIME	FLASHING	OFF	OFF	FLASHING	FLASHING	50,000

[1] A LEFT SWAMP LOOP ENTRANCE SHOT AFFECTS ONLY THE LAMPS, SHOWN IN TABLE H, ON THE LEFT SIDE OF THE PLAYFIELD AND A RIGHT SWAMP LOOP ENTRANCE SHOT AFFECTS ONLY THE LAMPS, SHOWN IN TABLE H, ON THE RIGHT SIDE OF THE PLAYFIELD.

NOTE: While the SAVE IT W/F lamp continues to flash, game results of additional SWAMP Loop completions beyond the 8th time will only repeat the SWAMP Loop completion pattern of the 6th time through the 9th time as shown in Table H, above.

When the ball operates the rollover switch in the right or the left outlane, 1,000 points are scored, whether the SAVE IT W/F lamp above the outlane is flashing or is not lit. Also, the SAME PLAYER RIDES AGAIN lamp flashes ON and continues to flash until the extra ball earned has been played and then either rolls through one of the outlanes or drains through the outhole which ends

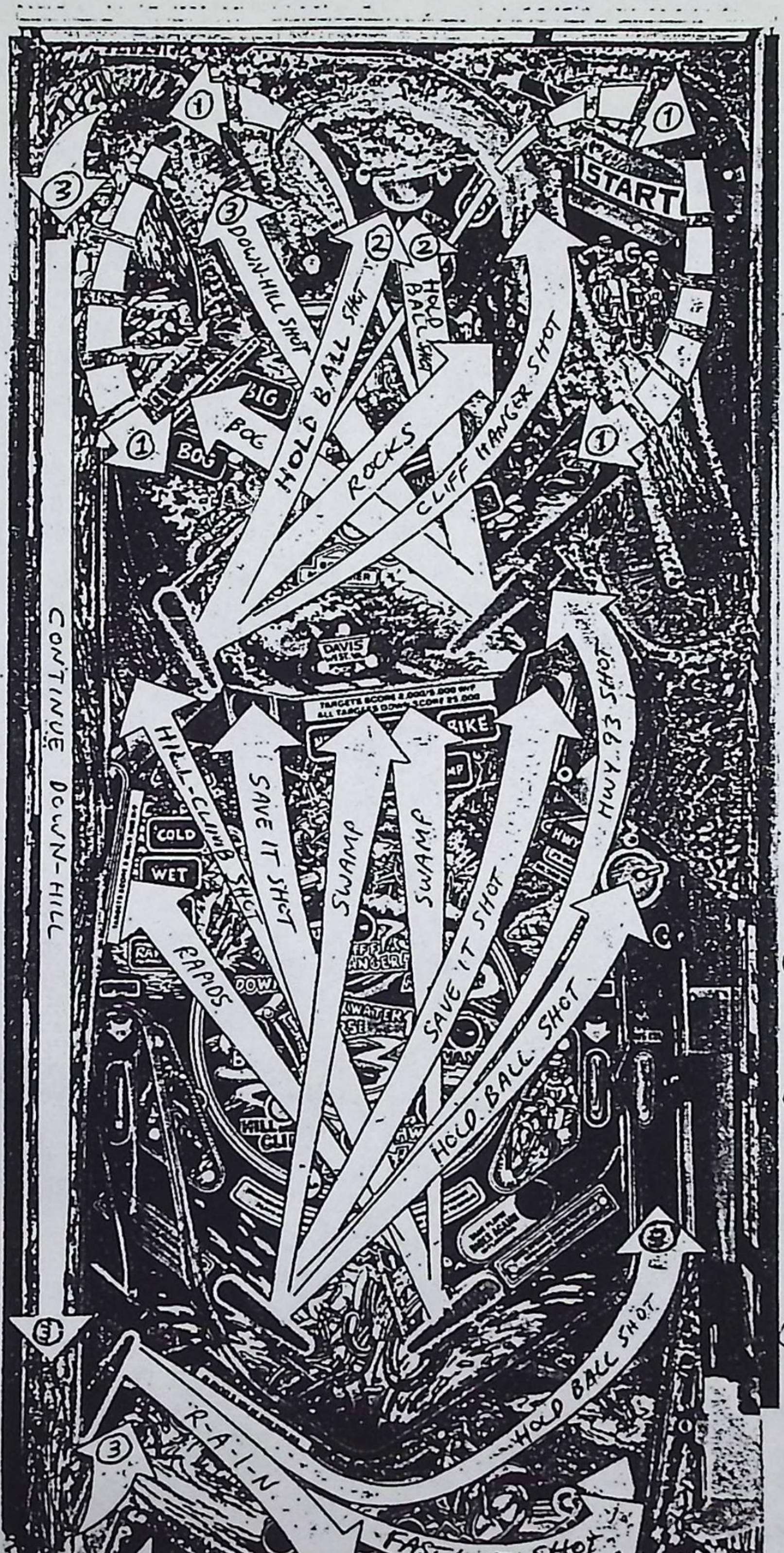
SPECIAL (Playfield; Left & Right Flipper Return Lanes)

The SPECIAL W/LIT lamps in the left & right flipper return lanes will light when the 4X BONUS MULTIPLIER lamp is lit. The SPECIAL lamps light only once per game. When the ball rolls through either flipper return lane and operates the lane's rollover switch, 5,000 points are scored. This occurs whether the lane's SPECIAL W/LIT lamp is lit or

SLINGSHOTS (Playfield)

When the ball hits the left slingshot or the right slingshot, it will operate one of two (2) switches per slingshot. Each hit scores 30 points.

FIGURE A. PLAYFIELD TOP VIEW – BALL PLAY VECTORS

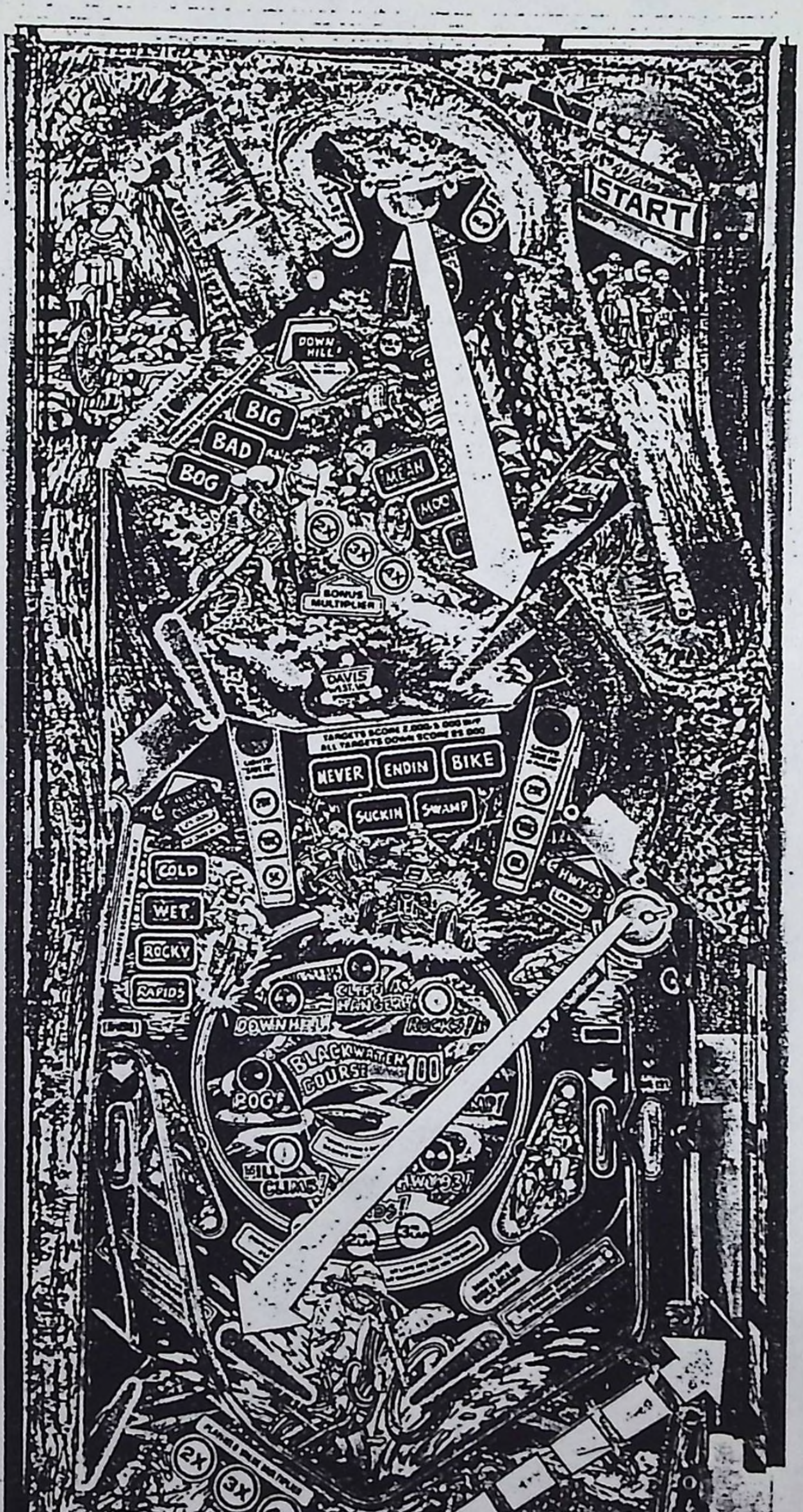


① ADVANCE BONUS MULTIPLIER VALUE

② START SPECIAL TEST (ONLY WHEN THE BALL IS KICKED/ EJECTED INTO PLAY)

③ FINISH SPECIAL TEST

FIGURE B - PLAYFIELD TOP VIEW - BALL EJECT VECTORS



NOTES:

1. TWO (2) 'SOLID' BALL EJECT VECTORS ARE SHOWN FOR TWO (2) SAUCER EJECT ASSEMBLIES.
2. ONE (1) 'DASHED' BALL EJECT VECTOR IS SHOWN FOR ONE (1) MULTI-BALL TROUGH ASSEMBLY.

SECTION 5
REGISTERS & OPTIONS INFORMATION

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TABLE A—REGISTERS & OPTIONS

CATEGORY	REGISTER DIRECTORY			
	PLAYER #1 & #2 DISPLAYS	PLAYER #3 & #4 DISPLAYS*	SEE NOTES	REGISTER DESCRIPTION
GAME STATUS	TOTAL COINS	XXXXXXX	1	Total Coins From All 3 Coin Chutes
	GAMES PLAYED	XXXXXXX	1	# Of Games Played
	REPLAYS AWARDED	XXXXXXX	1	# Of Replays Awarded From All Scores
	REPLAYS PERCENT	XX	1	Percentage Of All Replays—Maximum Of 99 Percent
	AV GAME TIME =	XX XX	1	Average Game Time In Minutes & Seconds
	HEATS PLAYED	XXXXXXX	1	# Of Heats Played
	X-BALLS AWARDED	XXXXXXX	1	# Of Extra Balls Awarded
	X-BALL PERCENT	XX	1	Percentage Of Extra Balls—Maximum Of 99 Percent
	AV HEAT TIME =	XX XX	1	Average Heat Time In Minutes & Seconds
	CLEAR ACCOUNT	NO**	2	Clear All Account Date
REPLAY STATUS	LEVEL 1 SPECIAL	XXXXXXX	1	# Of 1st Threshold Level Specials Awarded
	LEVEL 2 SPECIAL	XXXXXXX	1	# Of 2nd Threshold Level Specials Awarded
	LEVEL 3 SPECIAL	XXXXXXX	1	# Of 3rd Threshold Level Specials Awarded
	HISCORE SPECIAL	XXXXXXX	1	# Of High Score Specials Awarded
	PLAYFIELD SPECIAL	XXXXXXX	1	# Of Playfield Specials Awarded
	MATCH SPECIAL	XXXXXXX	1	# Of Match Feature Specials Awarded
SCORING STATUS	LEVEL 1 SCORE =	XXXXXXX	3	Set First Threshold Award Level & Display
	LEVEL 2 SCORE =	XXXXXXX	3	Set Second Threshold Award Level & Display
	LEVEL 3 SCORE =	XXXXXXX	3	Set Third Threshold Award Level & Display
	HIGHEST SCORE =	XXXXXXX	3	Set the High Score To Date Replay Level
	TIMES HS BEATEN	XXXXXXX	1	# Of Times Point Total Exceeded High Score To Date Earned
	LEVEL 1 PERCENT	XX	1	Actual Percentage Of First Threshold Level Replays Awarded
	LEVEL 2 PERCENT	XX	1	Actual Percentage Of Second Threshold Level Replays Awarded
	LEVEL 3 PERCENT	XX	1	Actual Percentage Of Third Threshold Level Replays Awarded
	TARGET PERCENT	XX	4	Enter desired percentage of replays awarded for reaching the First Threshold Level
COIN STATUS	LEFT COINS =	XXXXXXX	1	# Of Coins Thru Left Coin Chute
	MIDDLE COINS =	XXXXXXX	1	# Of Coins Thru Middle Coin Chute
	RIGHT COINS =	XXXXXXX	1	# Of Coins Thru Right Coin Chute
	TOTAL COINS =	XXXXXXX	1	Total # Of Coins Thru All Coin Chutes
	BONUS CREDITS	XXXXXXX	1	# Of Bonus Credits Awarded
COIN SET-UP	LEFT XX COIN	YY CRDT, ZZ BONS	10	Left Coin Chute Set-Up
	MIDDLE XX COIN	YY CRDT, ZZ BONS	10	Middle Coin Chute Set-Up
	RIGHT XX COIN	YY CRDT, ZZ BONS	10	Right Coin Chute Set-Up
GAME SET-UP**	FACTORY SETTING	NO**	2	Reset to factory selected options.
	CREDIT LIMIT=	10**	5	Set Credit Limit from 1-4:
	HEATS ALLOWED	03**	5	Set # of Heats Allowed from 1-5.
	LEVELS AWARD	REPLAY**	6	Set type of award for exceeding Threshold Levels
	SPECIAL AWARD =	REPLAY**	6	Set type of award for lighting Special lights
	HISCORE AWARD	3 REPLAY**	7	Set type of award for exceeding High Score To Date.
	BCKGRND SOUND	ON**	8	Provide background music during game play.
	MATCH PERCENT	10**	5	Set allowed Match Percent from 00-10. 00 = Option is disabled. 10 = Maximum percent.
	DISPLAY CREDITS	YES**	2	Display credits when game is over.
	NO LIMIT REPLAY	YES**	2	Allows more than 1 Special per game, per player.
	FREE PLAY	NO**	2	Set NO = Coins, or set YES = Free Play mode.
	TILT WARNING	01**	5	Set # of Tilt Warnings.
	ATTRACT SOUNDS	ON**	8	Set Attract Sound in Game Over mode.
	SLINGSHOTS	ON**	8	Activate slingshots.
	GAME OPTIONS	MEDIUM**	9	Set game difficulty level.
	MAXIMUM PLAYERS	04**	5	Set # of players allowed from 1-4.
	BUY-IN HEATS	02 **	5	Set # of Buy In Heats from 0-3
MISC. INFO.	TOTAL TIME =	XXXXXXX	1	Time in minutes the game is powered up from the time the game is ready for play.
	TIMES MULTIB	XXXXXXX	1	# Of times Multi-Ball Play was achieved

*Player #3 & #4 indicate a variable range of values. The XXXXXXX represents the number value and XX represents the % value. Player #4 shows the values that can be selected to replace the value shown in Player #3.

**Denotes Factory Setting

** See Coin Set-Up Procedure Examples On Page 5-4,

TABLE A—REGISTERS & OPTIONS CONT'D.

CATEGORY	REGISTER DIRECTORY			
	PLAYER #1 & #2 DISPLAYS	PLAYER #3 & #4 DISPLAYS*	SEE NOTES	REGISTER DESCRIPTION
GAME CHECK-UP	ALL LAMPS			Flashes all lamps on the Playfield.
	SINGLE LAMPS			Lamps flash sequentially until either lower cabinet button, located on the side of the cabinet, is pressed Press the lower right cabinet button to advance to the next lamp in the test Press the lower left cabinet button to 'back-up' to the previous test.
	DISPLAY TEST			Continuously cycles through all segments of any selected digit in either Display Driver Module. Press the lower right cabinet button to advance to the next digit to the right. Press the lower left cabinet button to 'back-up' to the previous digit to the left
	COIL TEST			Press the lower right cabinet button to advance to the next Solenoid in the test Press the lower left cabinet button to test the same Solenoid under test.
	PROGRAM VERSION			Displays EPROM's #U2 and #U3 program version.
	SWITCH TEST			Displays stuck switch by name.
HELP—READ ME HELP		ALL OK		ALL OK is displayed when no game problems are detected If a problem is detected in the game, assistance information will be displayed.

NOTES:

1—Can be reset to 00. only
2—Can be changed to YES (enabled) or NO (disabled). only.
3—Can be changed in 100,000 point steps
4—Has a value from 00 thru 20 Self Percentage feature is off (disabled) if this setting is 00.
5—Can be changed in unit steps
6—Can be changed to REPLAY, XBALL, POINTS or NOTHING.
7—Can be changed to 3 REPLAYS, 2 REPLAYS, 1 REPLAY or NOTHING.
8—Can be changed to ON (enable) or OFF (disable).
9—Can be changed to XX-EASY, X-EASY, EASY, MEDIUM, HARD, X-HARD or XX-HARD.
10—XX coins buys YY credits, and bonus credits will be awarded by buying ZZ credits

COIN SET-UP PROCEDURE

EXAMPLE 1

A.—Enter COIN SET-UP category to set the right coin chute for 3 credits for 2 coins played (with no credits on the first coin).

B.—Enter the directory.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	XX COIN	YY CREDIT	XX BONS

C.—Set the directory to RIGHT, 02 COIN, 03 CREDIT and 00 BONS.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	02 COIN	03 CREDIT	00 BONS

EXAMPLE 2

A.—Enter COIN SET-UP category to set the right coin chute for 3 credits for 2 coins played (with one credit on the first coin and 2 credits on the second coin).

B.—Enter the directory.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	XX COIN	YY CREDIT	XX BONS

C.—Set the directory to RIGHT, 01 COIN, 01 CREDIT and 02 BONS.

PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	PLAYER 3 DISPLAY	PLAYER 4 DISPLAY
RIGHT	01 COIN	01 CREDIT	02 BONS

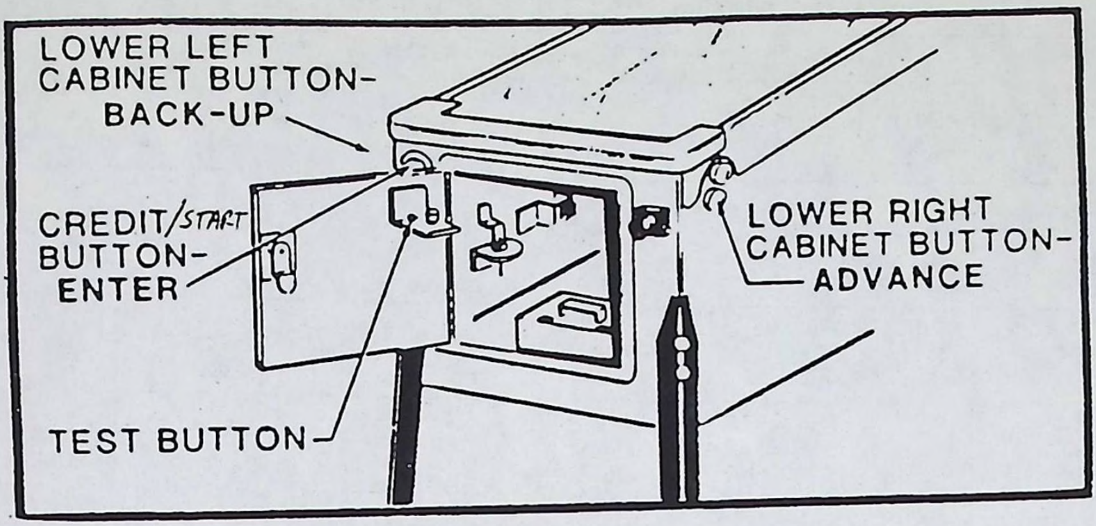
LOWER LEFT CABINET BUTTON– BACK-UP
CREDIT/START BUTTON– ENTER
TEST BUTTON
LOWER RIGHT CABINET BUTTON– ADVANCE

FIGURE A–REGISTERS & OPTIONS SELECT BUTTONS

BALLY-MIDWAY PINBALL REGISTERS & OPTIONS ACCESS & MODIFICATION INSTRUCTIONS

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1. Enter the Test Mode by pressing the Test Button on the inside of the front door.
2. Change the category by pressing the right or the left lower cabinet button.
3. Select the category and open its directory by pressing the Credit buttons. /Start
4. Change directory by pressing the right or the left lower cabinet button
5. Select & open the register in the directory by pressing the Credit button. /Start
6. Change register values by pressing the right or the left lower cabinet button.
7. Lock-in selected register values by pressing the Credit button. /Start
8. Repeat steps 4 through 7 for more register changes or changes in the same category. To exit the Test Mode, press the Test button.

TABLE B—RECOMMENDED 3 & 5 HEAT OPTION SETTINGS

GAME MODE	CATEGORY	REGISTER DIRECTORY					
		PLAYER 1 DISPLAY	PLAYER 2 DISPLAY	3 HEAT PLAYER 3 DISPLAY	3 HEAT PLAYER 4 DISPLAY	5 HEAT PLAYER 3 DISPLAY	5 HEAT PLAYER 4 DISPLAY
REPLAYS	GAME SET UP	SPECIAL AWARD		REPLAY*		REPLAY	
		HISCORE AWARD		3 REPLAY*		3 REPLAY	
		MATCH PERCENT		10*		10	
		GAME OPTIONS		MEDIUM*		HARD	
	SCORING STATUS	LEVEL 1 SCORE		2,000,000		3,300,000	
		LEVEL 2 SCORE		4,000,000		6,600,000	
		HIGHEST SCORE		4,300,000		7,000,000	
	COIN SET UP		RIGHT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			LEFT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			MIDDLE 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
EXTRA BALL	GAME SET UP	SPECIAL AWARD		XBALL		XBALL	
		HISCORE AWARD		NOTHING		NOTHING	
		MATCH PERCENT		00		00	
		GAME OPTIONS		MEDIUM*		HARD	
	SCORING STATUS	LEVEL 1 SCORE		2,000,000		3,300,000	
		LEVEL 2 SCORE		4,000,000		6,600,000	
		HIGHEST SCORE		4,300,000		7,000,000	
	COIN SET UP		RIGHT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			LEFT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			MIDDLE 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
NOVELTY	GAME SET UP	SPECIAL AWARD		POINTS		POINTS	
		HISCORE AWARD		NOTHING		NOTHING	
		MATCH PERCENT		00		00	
		GAME OPTIONS		MEDIUM*		HARD	
	SCORING STATUS	LEVEL 1 SCORE		2,000,000		3,300,000	
		LEVEL 2 SCORE		4,000,000		6,600,000	
		HIGHEST SCORE		4,300,000		7,000,000	
	COIN SET UP		RIGHT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			LEFT 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS
			MIDDLE 01* COIN	01* CRDT	00* BONS	01 CRDT	00 BONS

* = Denotes Factory Setting

NOTE: Player #4 values can be selected to replace the settings shown in Player #3 display. However, the #4 Player values do not apply for any of the Coin Set Up Procedure or values. See the Coin Set-Up Procedure example on page 5-4.

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SERVICING THE GAME

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DETACHING THE PINBALL GAME BACKBOX

Before detaching the Backbox Assembly from the game, *Bally-Midway* recommends the following procedure. For additional information, refer to Figure A on page 6-3.

STEP 1 - With the Backbox in the upright position, disconnect the Front Cabinet & Playfield cable connectors from the Backbox printed circuit board assemblies.

NOTE: Before disconnecting any connector on the printed circuit boards, turn OFF the power to the game.

STEP 2 - Remove the two (2) long 3/8" hold-down bolts and flat washers that secure the Backbox to the Front Cabinet Assembly and lower the Backbox to its "transport position".

STEP 3 - Remove the two (2) nuts and bolts that hold the right Backbox mounting bracket to the "neck" portion of the Front Cabinet.

STEP 4 - Raise the Backbox to its upright position.

STEP 5 - Lift the right corner of the Backbox approximately 3/4" and pull/slide the Backbox towards the right side of the Front Cabinet. The Backbox should now be disgaged from the right and left cabinet hinges and can now be detached from the Front Cabinet.

To re-attach the Backbox to the Front Cabinet, perform Steps 1 thru 5 in reverse.

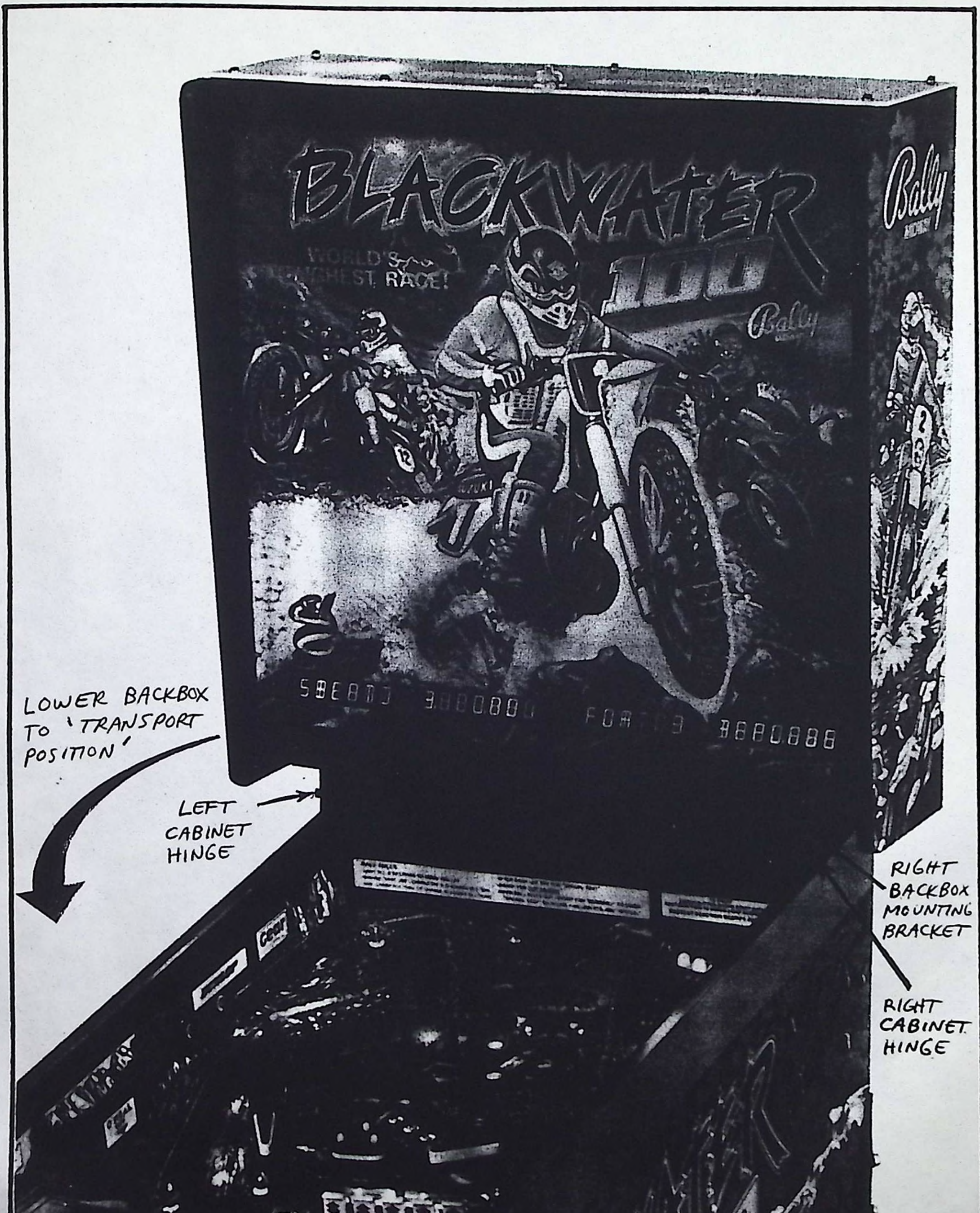
SWITCH ASSEMBLY ADJUSTMENTS

All switch assemblies consist of switch blades, contacts separators, plastic tubing and screws to hold them to the mounting surface. Before attempting to adjust a switch assembly, ensure that the screws are tight. If not, tighten the front screw (closest to the switch blade) first and then the back screw (closest to the soldering end of the blade). This will prevent the assembly from being secured in such a manner that the switch blades tend to fan-out.

In general, all switch blades are adjusted for a 1/16" gap between the switch contacts in the open position and adjusted for .010" over-travel or wipe in the closed position. All switch contacts should be free of dust and dirt. Contacts, with the exception of the Flipper Button Switch Assemblies, are plated to resist corrosion. Filing or burnishing the switch contacts breaks the finish and encourages corrosion. Clean the switch contacts by gently closing them on a clean business card or piece of paper and wiping until the contacts are clean.

To clean Flipper Button Switch Assembly contacts: Remove the tarnish from the switch contacts with a contact file followed by a burnishing tool. Severely pitted contacts must be replaced and adjusted only when they are found to be a source of game malfunction.

FIGURE A. PINBALL GAME BACKBOX BEFORE DETACHING



SECTION 7

ROUTINE MAINTENANCE ON LOCATION

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SWITCH ASSEMBLY MAINTENANCE

After successful completion of all Diagnostic Tests in the Test Mode's GAME CHECKUP category, set the game up for play. Exercise each rollover, thumper-bumper (if applicable), slingshot, target and rebound switches with a game ball until each switch on the Playfield has been checked for proper operation.

When the operation of any switch results in intermittent or no response, clean the switch contacts. Gently close them on a clean business card or piece of paper with a 'wiping' motion until the contacts are wiped clean. If necessary, re-gap the switch contacts to 1/16". **DO NOT burnish or file gold plated switch contacts!**

LUBRICATION SPECIFICATION - DROP TARGET ASSEMBLY (5 SIDE-BY-SIDE)

Lubricating the various components on the Drop Target Assembly as part of routine maintenance, ensures reduced friction during game operation.

Referring to Figure A on page 7-3, the lubrication specifications are as follows.

TABLE A - DROP TARGET ASSEMBLY LUBRICATION SPECIFICATIONS

STEP#	LUBRICANT	COMPONENT LOCATION
1	OIL	Item #8 - In hole of each snap-in coil NYLINER
2	OIL	Item #22 - Around surface of each PIVOT PIN
3	GREASE	Item #7 - In pivot hole of each DROP TARGET LINK
4	GREASE	Item #20 - In each slot of STATIONARY BOTTOM PLATE
5	GREASE	Item #15 - In each slot of BACK PLATE

NOTE: See pages 11-28 & 11-29 for parts information.

BALLY-MIDWAY recommends that the following lubricants be used.

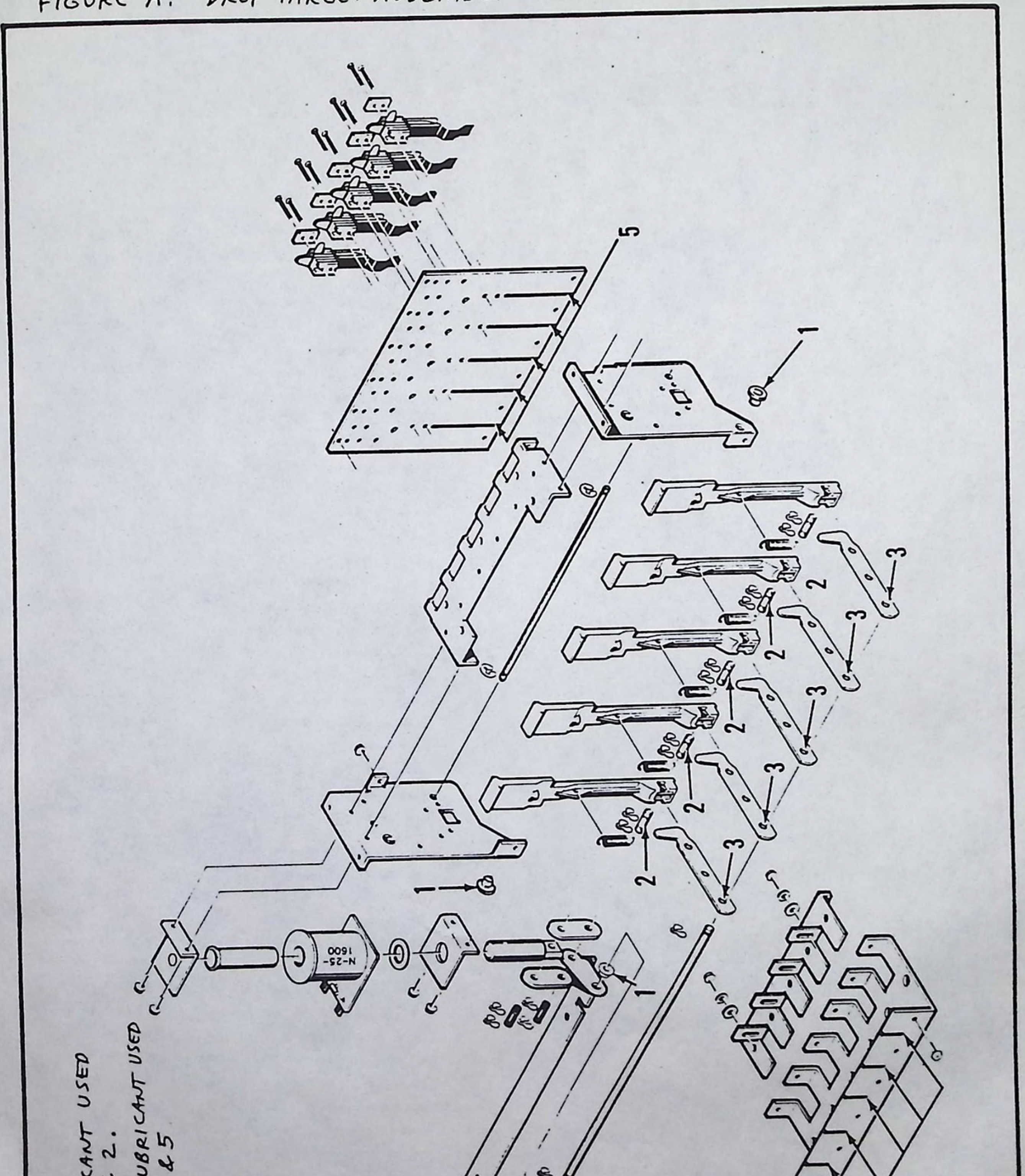
MEDIUM VISCOSITY OIL
SUNEX #157, WAY OIL
VISCOSITY: 300 - 350

CONTACT: SUNNYSIDE CORPORATION
225 WEST CARPENTER
WHEELING, ILLINOIS 60090
PHONE: (312)541-5700

MBI INSTRUMENT GREASE
NON-GUMMING LUBRICANT

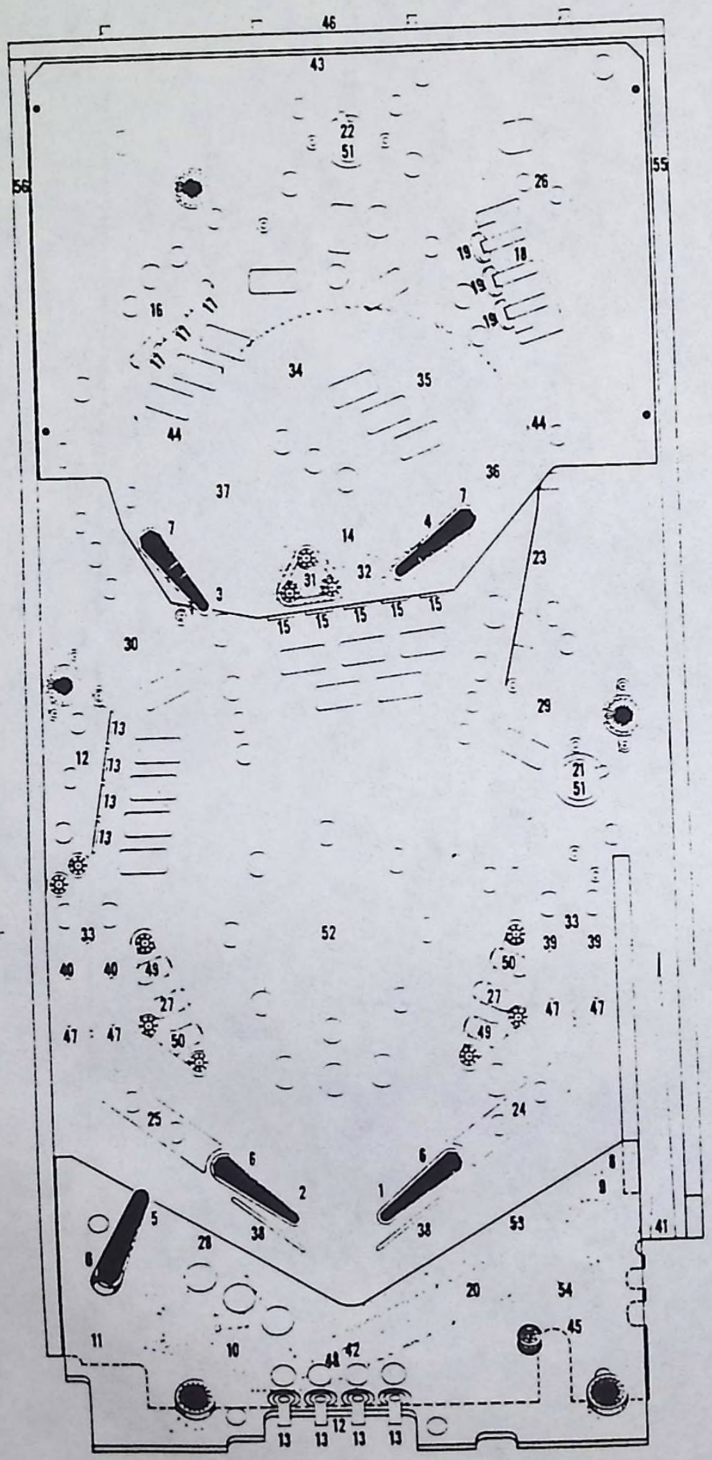
CONTACT: TRANS CENTRAL OIL COMPANY
2649 EAST 95TH STREET
CHICAGO, ILLINOIS 60617
PHONE: (312)734-4113

FIGURE A. DROP TARGET ASSEMBLY LUBRICATION POINTS



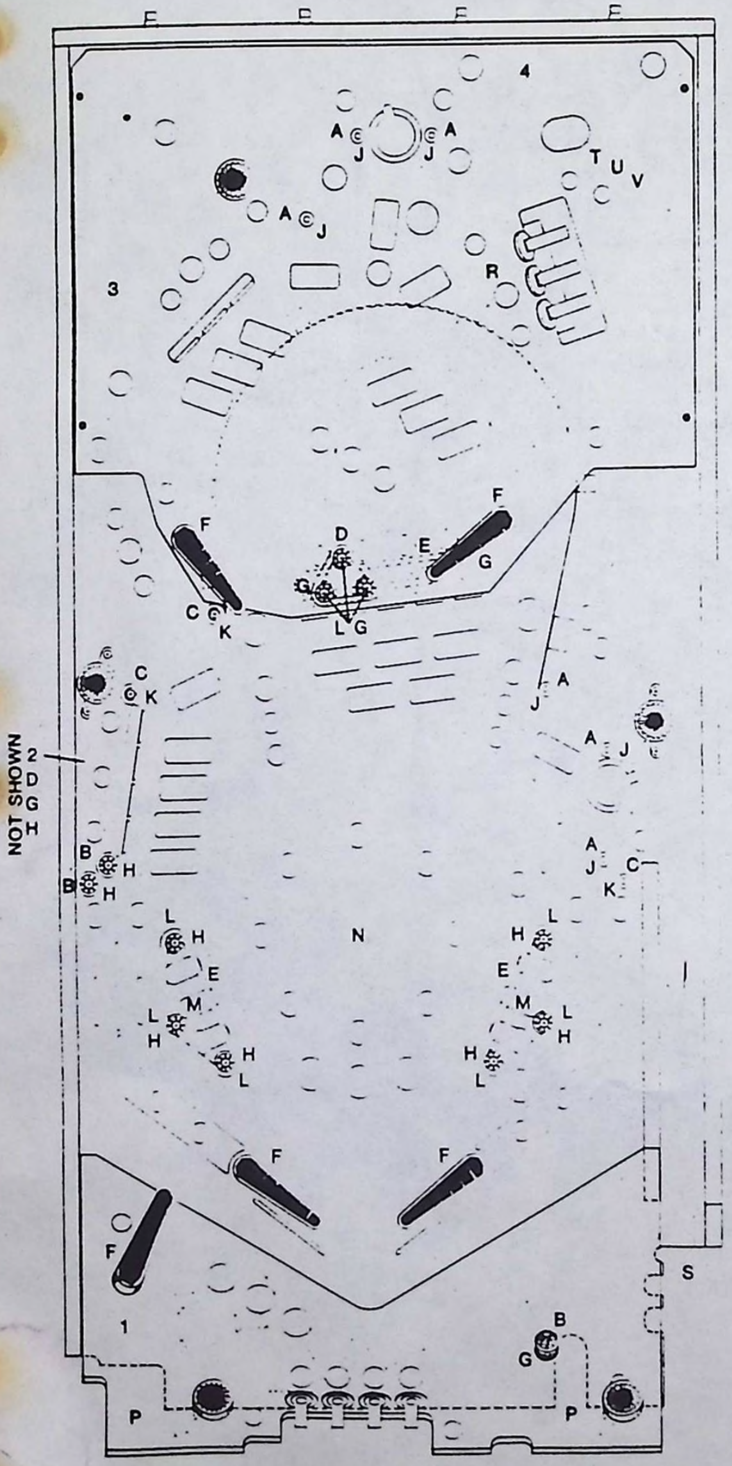
NOTE:
OIL IS LUBRICANT USED
IN STEPS 1 & 2.
GREASE IS LUBRICANT USED
IN STEPS 3, 4 & 5

FIGURE A. PLAYFIELD ASSEMBLY – TOP VIEW WITH PARTS LIST



ITEM	DESCRIPTION	PART NO
1	FLIPPER ASSY : DOUBLE SWITCH RIGHT	AC70-00023-0100
2	FLIPPER ASSY : DOUBLE SWITCH LEFT	AC70-00023-0200
3	FLIPPER ASSY : DOUBLE SWITCH LEFT w/EXTENSION	A365-05020-0001
4	FLIPPER ASSY. : SINGLE SWITCH RIGHT w/EXTENSION	A365-05030-0001
5	FLIPPER ASSY. : SINGLE SWITCH RIGHT	A365-05030-0002
6	FLIPPER w/SHAFT : BLUE	0365-04800-0002
7	FLIPPER w/SHAFT : BLUE	0365-04800-0012
8	MULTI-BALL KICKER ASSEMBLY	AHC -00027-0000
9	MULTI-BALL KICKER	AHC -00028-00XF
10	KICKER ASSEMBLY : TOP BALL RETURN	A360-00234-0000
11	KNOCKER ASSEMBLY	A360-00235-0000
12	TARGET AND BRACKET ASSEMBLY : BLUE	A365-R0306-F1[illegible]
13	TARGET WITH SWITCH ASSEMBLY : BLUE	A365-R0300-0002
14	DROP TARGET ASSEMBLY : 5 UNIT SIDE BY SIDE	A365- 5550-0001
15	TARGET WITH DECAL : YELLOW	A365-05501-0002
16	TARGET AND BRACKET ASSEMBLY : GREEN	A365-R0307-F114
17	TARGET WITH SWITCH ASSEMBLY : GREEN	A365-R0300-0003
18	TARGET AND BRACKET ASSEMBLY : YELLOW	A365-00407-0035
19	TARGET WITH SWITCH ASSEMBLY : YELLOW	A365-R0300-0003
20	MULTI-BALL TROUGH ASSEMBLY	A365-00347-0000
21	SAUCER ASSEMBLY : EJECT LEFT	A365-05320-0002
22	SAUCER ASSEMBLY : EJECT RIGHT	A365-05310-0002
23	SCOOP ASSEMBLY	A365-06400-000[illegible]
24	BALL GUIDE ASSEMBLY : FLIPPER RIGHT	A365-07300-0003
25	BALL GUIDE ASSEMBLY : FLIPPER LEFT	A365-07300-0004
26	BALL STOP ASSEMBLY (START GATE)	A365-07550-0001
27	KICKER ASSEMBLY : SLINGSHOT	A967-00059-0000
28	EXTENSION : BOTTOM ARCH	0365-06500-0001
29	RAMP ENTRANCE PLATE : RIGHT	0365-06600-0003
30	RAMP ENTRANCE PLATE : LEFT	0365-06600-0004
31	WIRE FORM : BALL GUIDE : 1 3/8"	0365-00151-1375
32	WIRE FORM : BALL GUIDE : 1 7/8"	0365-00151-1875
33	WIRE FORM : BALL GUIDE : 2 5/8"	0365-00151-2625
34	WIRE FORM : BALL GUIDE : 3 1/4"	0365-00151-3250
35	WIRE FORM : BALL GUIDE : 3 3/4"	0365-00151-3750
36	WIRE FORM : BALL GUIDE	0365-03700-0001
37	WIRE FORM : BALL GUIDE	0365-03700-0002
38	WIRE FORM : BALL GUIDE	0360-00175-5300
39	WIRE FORM WITH BRACKET ASSEMBLY	A365-06310-0004
40	WIRE FORM WITH BRACKET ASSEMBLY	A365-06320-0004
41	WIRE FORM WITH BRACKET ASSEMBLY	A365-06320-0003
42	WIRE FORM WITH BRACKET ASSEMBLY	A365-06320-0005
43	WIRE FORM WITH BRACKET ASSEMBLY	A365-06310-0002
44	MICRO SWITCH WITH BRACKET ASSEMBLY	A365-06900-0003
45	GATE ASSEMBLY WITH BRACKET AND WIRE FORM	A365-06100-0017
46	SWITCH ASSEMBLY : ROLLOVER	A020-00095-0311
47	SWITCH ASSEMBLY : ROLLOVER	A020-00095-0301
48	SWITCH ASSEMBLY : OUTHOLE	A020-00095-0401
49	SWITCH ASSEMBLY : SLINGSHOT	A360-00230-0000
50	SWITCH ASSEMBLY WITH DIODE	A360-00239-0000
51	SWITCH ASSEMBLY : EJECT	A020-00095-060
52	MYLAR : PLAYFIELD	0365-00407-1000
53	4 POSITION DETECTOR BOARD ASSEMBLY	B084-91894-B000
54	4 POSITION EMITTER BOARD ASSEMBLY	B084-91895-B000
55	GUIDE : PLAYFIELD : RIGHT	0405-00184-01XF
56	GUIDE : PLAYFIELD : LEFT	0405-00184-02XF

FIGURE B. PLAYFIELD ASSEMBLY – TOP VIEW WITH RAMPS, RUBBER RINGS & POSTS PARTS LIST



RAMPS

1	FRONT PLATFORM VACUUM FORM	0365-00H07-1015
2	LEFT SIDE BALL RUNWAY VACUUM FORM	0365-00H07-1017
3	REAR LOWER NETWORK RAMP	0365-00H07-1020
4	REAR UPPER NETWORK RAMP	0365-00H07-1021

RUBBER RINGS

A	BUMPER: POST: WHITE: RUBBER	0017-00041-0032
B	BUMPER. POST WHITE: RUBBER	0017-00041-0037
C	BUMPER: WHITE: RUBBER: I.D. = .23"	0017-00041-064
D	BUMPER: POST: WHITE: RUBBER: I.D.=15"	0017-00041-0044
E	BUMPER: POST: WHITE: RUBBER: I.D.=25"	0017-00041-0046
F	FLIPPER: RUBBER: YELLOW	0017-00041-0053

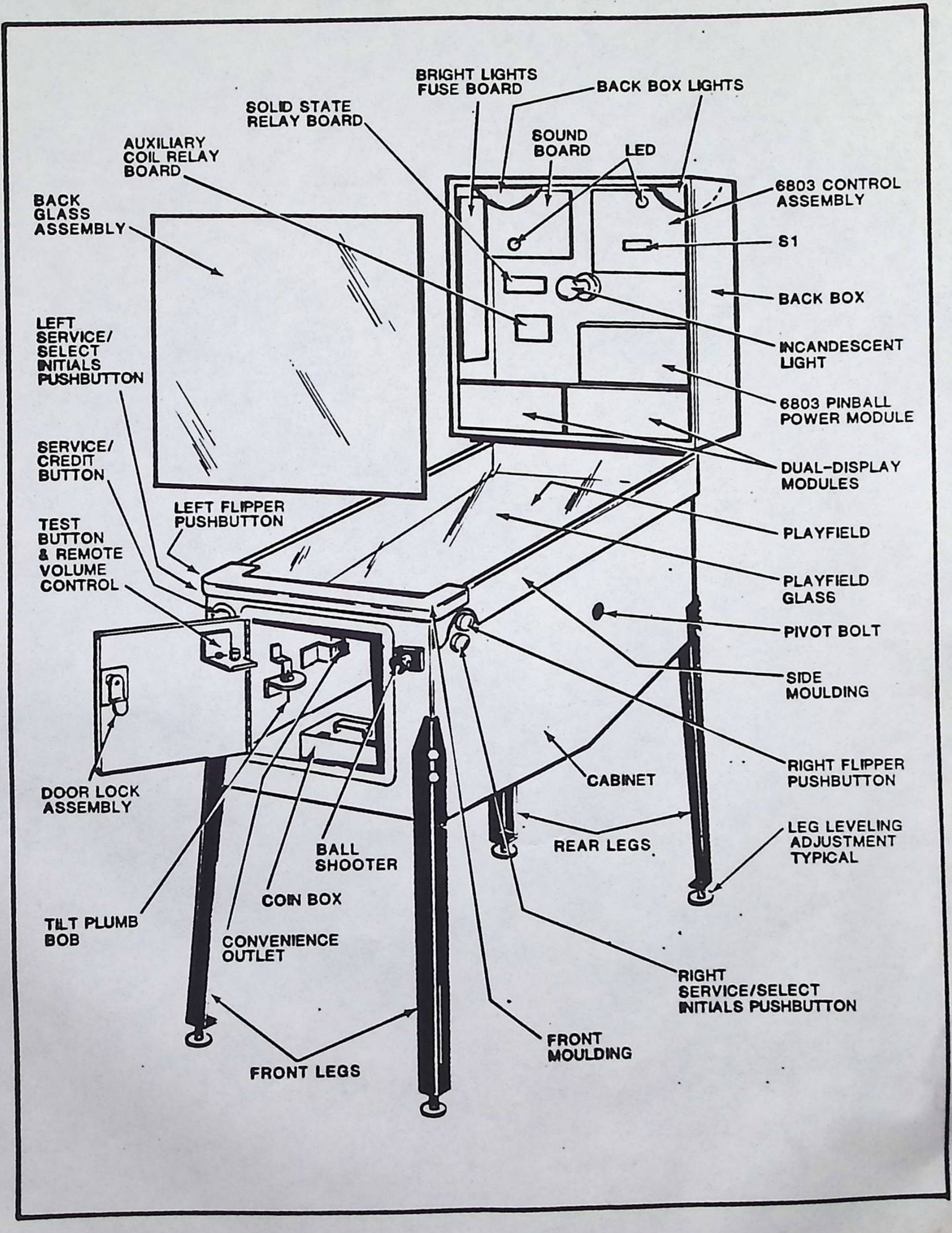
POSTS

G	POST: L=1.020" GREEN	0017-00042-0072
H	POST: L=1.205" GREEN	0017-00042-0074
J	POST: BUMPER: #10-32 x 7/16"	0365-00702-00XF
K	POST: 3/8" DIA. x 1 3/16"	0365-00980-0002

MISCELLANEOUS PARTS

L	ACORN NUT: NYLON #5	0017-00009-0302
M	MYLAR SHIELD: SLINGSHOT	0017-00091-007
N	MYLAR. PLAYFIELD	0365-00H07-1000
P	DECALS:	0365-00H07-1025
R	MEAN MOON ROCK SCENERY	0365-00H07-1028
S	DECALS: SHOOTER	0365-00H07-1031
T	LAMP FILTER:	0365-17041-0001
U	LAMP FILTER:	0365-17041-0003
V	LAMP FILTER:	0365-17041-0004

FIGURE C. BLACKWATER 100 PINBALL GAME PARTS LOCATION



SECTION 8

SERVICE HINTS

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CLEANING THE PLAYFIELD

The Bally-Midway Playfield has an improved "tuff-coat" finish with excellent wearing properties. Life expectancy of the Playfield as well as play appeal, can be extended by periodic cleaning.

DO

Bally recommends that you clean the Playfield with Wildcat #125 (Wildcat Chemical Company, 1349 East Seminary Drive, Fort Worth, Texas 76115, 817-924-8321). Wildcat #125 is a combination cleaner and polish. Bally-Midway has tried and tested this product and found it to be very effective. If Wildcat #125 is not available, Bally suggests that you ask your Distributor to order it.

Inspect and hand polish the ball in a clean cloth. A chipped ball must be replaced. If not, it will ruin the finish on the Playfield in a short period of time.

DON'T

Do not use water in large quantities, highly caustic cleaners, abrasive cleaners and cleaning pads on the Playfield, or allow a wax or polish build-up. Waxes yellow with age and spoil play appeal.

SERVICING THE PLAYFIELD—SEMI-UPRIGHT & UPRIGHT POSITIONS

To provide access for servicing the Playfield, in the SEMI-UPRIGHT or UPRIGHT position, the following procedure is recommended. For additional information, see FIGURE A on page 8-3.

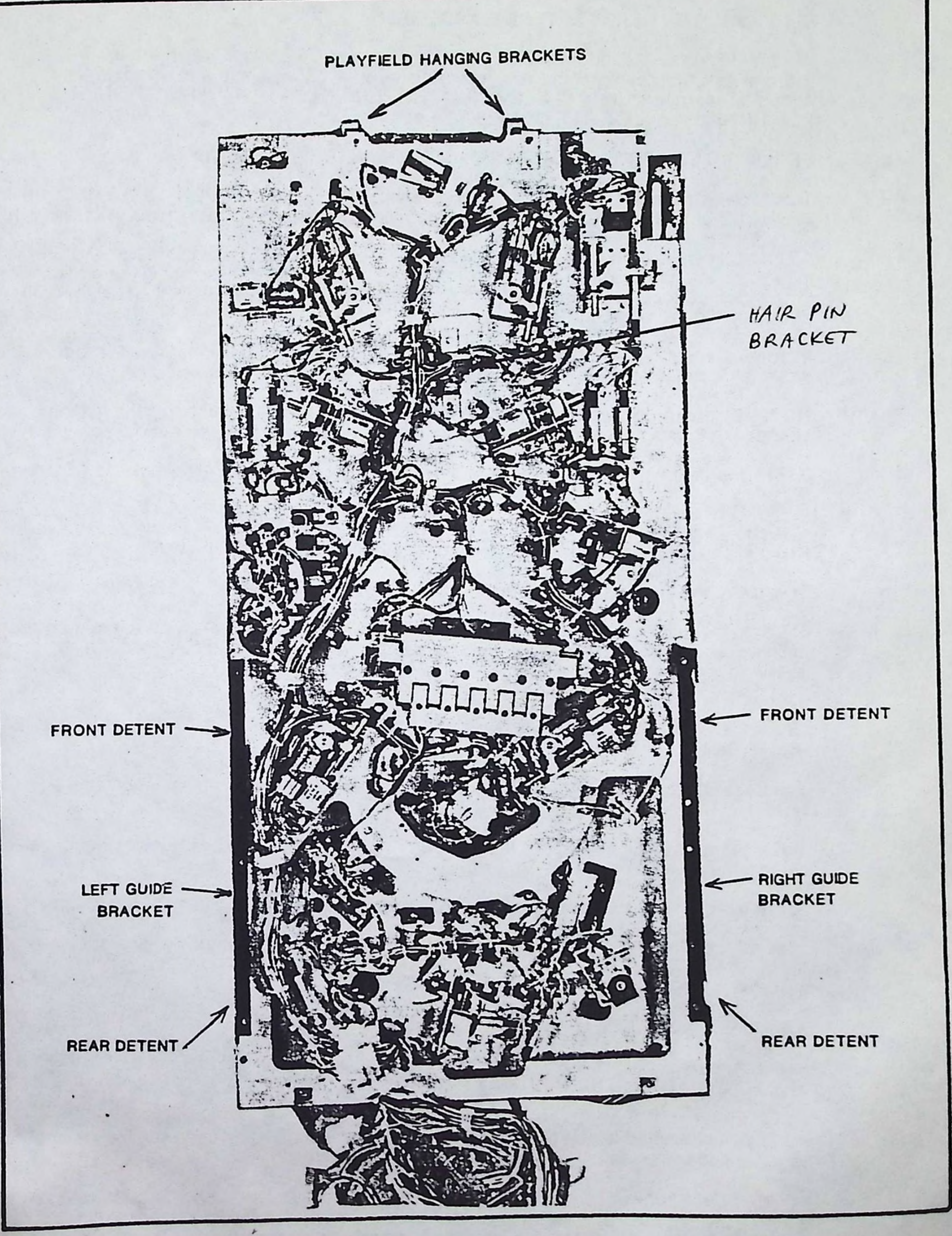
1. Lift up the Playfield by the bottom arch extension (above the outhole) until the rear bottom edge of Playfield rests against the bottom of the cabinet.
2. Continue lifting and pulling the Playfield up, vertically, to ensure that the guide brackets on the Playfield are clear of the hinge-pins on the sides of the cabinet. When the guide brackets are clear the hinge-pins, pull the Playfield towards you. As you pull on the Playfield, the guide brackets will slide on the hinge-pins.
3. Continue to pull the Playfield out until the rear detents on the guide brackets engage on the hinge-pins. This will position the Playfield in the SEMI-UPRIGHT service position.
4. To position the Playfield in the full UPRIGHT position, continue lifting and rotating the Playfield until it rests against the Backbox.

SERVICING THE PLAYFIELD—RETURN TO PLAY POSITION

The following procedure is recommended to return the Playfield to the play position.

1. Lower Playfield to the SEMI-UPRIGHT service position, resting on the Hair-pin Bracket.
2. Hold the Back-Board with one hand and hold the Playfield with the other hand.
3. Lift the rear of the Playfield approximately 1" to disengage the rear guide bracket detents from the hinge-pins. Next, slide the Playfield toward the rear of the cabinet. In this position, the Playfield is resting on the non-dented areas of the guide brackets.
4. Continue sliding the Playfield toward the rear of the cabinet until the "playing" position detents on the guide brackets engage on the hinge-pins.
5. Lower the Playfield front end into the playing position. Ensure that the Playfield hanging brackets fully engage into the slots in the cabinet Front Rail Assembly.

FIGURE A. PLAYFIELD IN SEMI-UPRIGHT POSITION & UPRIGHT POSITION



SERVICING THE REAR PLATFORM ASSEMBLY

When the Playfield is lifted up in the FULL UPRIGHT service position, all important Rear Platform Assembly components are accessible through cut-outs in the Playfield. For additional information, refer to SERVICING THE PLAYFIELD - SEMI-UPRIGHT & UPRIGHT POSITIONS on page 8-2 and, also, Figure A on page 8-3.

SERVICING THE FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY

The following procedure is recommended to service the REAR PLATFORM ASSEMBLY on the Playfield. For additional information, see Figure B on page 8-5, to locate items (1) through (8).

1. Position the Playfield in the SEMI-UPRIGHT service position by resting the Hair-Pin Bracket, located on the bottom of the Playfield, onto the cabinet Front Rail Assembly. For additional information, refer to SERVICING THE PLAYFIELD - SEMI-UPRIGHT & UPRIGHT POSITION and, also, Figure A on page 8-3.

2. To remove the entire Front Platform Assembly, disconnect the two (2) Front Platform Cable Assembly connectors from the two (2) Playfield Cable Assembly connectors.

NOTE: Before disconnecting the connectors, it is advisable to identify or tag the mating connectors to ensure that the connectors are properly connected when re-connected.

3. Remove the metal bumper post hold-down stud (1) and remove the rail hold-down screw (2).

4. Remove the Ball Runway Ramp hold-down screws (3) and (4), and pull the Ball Runway Ramp slightly to the right to gain access to the Playfield hold-down screw (5).

5. Remove the Playfield hold-down screws (5), (6), (7) and (8), along with their washers.

6. Lift up the right side of the Front Platform Assembly, and pull the Platform to the right so that the left side of the Platform cannot damage the Ball Runway Ramp, as the Platform Assembly is being removed.

SERVICING THE FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY - RETURN TO PLAY POSITION

The following procedure is recommended to return the Front Platform Assembly to the Play Position.

1. Carefully, guide the left side of the Platform Assembly under the Ball Runway Ramp before seating the assembly onto the Playfield.

2. Pull the Ball Runway Ramp slightly to the right and install the Playfield hold-down screw (5), along with its washer.
3. Install the Playfield hold-down screws (6), (7) and (8), along with their washers.

4. Install the rail hold-down screw (2).

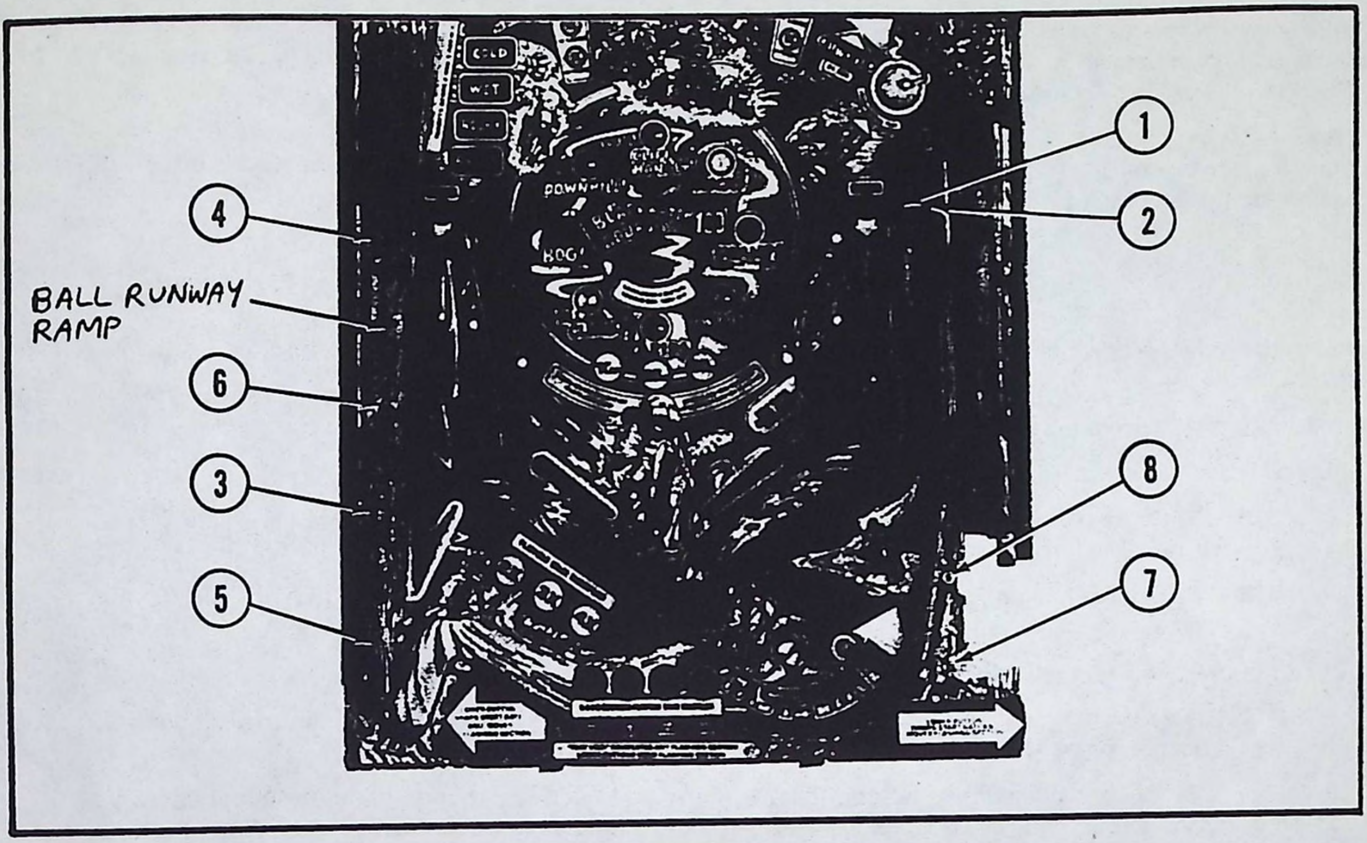
5. Install the metal bumper post hold-down stud (1).

6. Return the Playfield to the Play Position. For additional information, refer to SERVICING THE PLAYFIELD - RETURN TO PLAY POSITION on page 8-2 and, also, Figure A on page 8-3.

NOTE 1: Any feature lamp socket assembly or general illumination lamp socket assembly can be accessed by removing the lamp socket assembly screw.

NOTE 2: *Bally-Midway* recommends that when the Platform Assembly has been returned to its Play Position, the ALL LAMPS and SWITCH tests be performed to ensure that the components on the Platform Assembly are functioning properly.

FIGURE B. SECURING THE FRONT PLATFORM (BOTTOM ARCH) TO THE PLAYFIELD



CONTROL BOARD ERROR DETECTION SUB-ROUTINE

Bally-Midway has installed a new sub-routine to detect CMOS RAM error or battery failure on the 6803 Control Board Assembly.

When an error occurs, a "1" will be added in the "units" digit of the High Score To Date total, each time an error occurs. This condition will also be displayed if the program has been changed to that of another game program. This is accomplished by comparing the EPROM version number in the EPROM with the previously stored EPROM version number in CMOS RAM.

When an error occurs or new EPROMs are installed on the Control Board Assembly, the following events will occur the next time the game is powered up.

1. ACCOUNT CLEARED will be displayed. This indicates that all "accounting data" registers have been reset to zero (0).
2. INSTALL FACTORY will be displayed. This indicates that all "game features" have been reset to the Factory Recommended Settings.
3. The High Score To Date "units" digit is incremented by "1." If the High Score To Date score was 6,000,000 before the game was powered up, it will now display 6,000,001 when the game is powered up.

4. When the game is powered up, the EPROM version I.D. number is written into CMOS RAM.

NOTE: The RAM error can only be cleared by holding the left and right coin switches closed while the game is powering up. This is a "quick" procedure to clear all "accounting data" and reset the game to Factory Recommended Settings.

FIXED "TWO PLAYERS PER GAME" MODE FOR ONE AVAILABLE DISPLAY DRIVER MODULE

The system in this game is designed for reasonably normal operation when one Display Driver Module is damaged and unusable. To use only one Display Driver Module, the game must be adjusted to operate in a "Two Players Per Game" mode.

"Reasonably normal operation" is defined as a means of providing a maximum of two (2) players per game information to be able to play the game. During the Game Play Mode, only the following information is displayed, entirely, on the left Display Driver Module.

CURRENT GAME BALL IN PLAY
PLAYER #1 GAME SCORE
PLAYER #2 GAME SCORE

During the Attract Mode, only the HIGH SCORE TO DATE for players 1 & 2, is displayed, entirely, on the left Display Driver Module.

The following procedure must be performed to adjust the game for the "Two Players Per Game" mode.

1. Power the game up.

   NOTE 1: When the left Display Driver Module is not working properly, exchange it with the right Display Driver Module before proceeding.

   NOTE 2: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

2. Turn power OFF and remove the damaged Display Driver Module.

   NOTE: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

3. Turn power ON. Simultaneously, hold in the lower left cabinet button on the front cabinet while pressing the Credit/Start and Test buttons with the left index finger and thumb, respectively. This action will cause the game to enter the Test Mode and, at the same time, adjust the game to a limit of "Two Players Per Game."

4. Press the Test button again to return the game to the Game Play Mode.

The above procedure prevents the system from entering the "Three Players Per Game" mode or the "Four Players Per Game" mode, regardless of how many credits the player attempts to add to the game.

To discontinue the fixed "Two Players Per Game" mode, perform the following procedure.

1. Turn the game OFF and re-install the repaired Display Driver Module or install a new Module.

   NOTE: Before exchanging or replacing Display Driver Modules, see the **WARNING** for Troubleshooting On Location on page 9-4.

2. Turn the game ON and enter the Test Mode by pressing the Test button on the Coin Door Assembly.
3. Select the GAME SET-UP category with the lower right cabinet button.
4. Press the Credit/Start button to open this category's directory.
5. Select the MAXIMUM PLAYERS register in the directory with the top SELECT INITIALS button.
6. Press the Credit/Start button to open the register.
7. Select the 4 PLAYERS register with the lower right cabinet button.
8. Press the Credit/Start button to lock-in the 4 PLAYERS register value.
9. Press the Test button to exit the Test Mode.

   NOTE: Anytime the FACTORY RESET condition occurs, the game will revert back to the "Four Players Per Game" mode.

SECTION 9
TROUBLESHOOTING ON LOCATION

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GAME WON'T POWER-UP

Game does not complete the power-up sequence (i.e., Displays functioning and Playfield lights are flashing) when power is turned on and the general illumination lamps are lit.

ACTION TO TAKE:

A. Check Fuses on the Power Module Assembly.

B. Turn power OFF and open the Backbox. Locate the LED (Light Emitting Diode) on the 6803 Control Board Assembly. For additional information, see the 6803 CONTROL BOARD POWER-UP TEST SEQUENCE below.

C. If the +5VDC and the +14VDC are present on the Control Board Assembly, the game performs a self-diagnostic test. When no problems are encountered, the game powers-up immediately without flashing the LED on the Control Board Assembly. When a problem is detected, the LED will flash the approximate number of times for each diagnostic test passed. (i.e., If the LED only flashes three [3] times, U4 is probably defective, using the Table of power-up sequences below.

CONTROL BOARD POWER-UP TEST SEQUENCE

1st Flash—Determines if the internal RAM of the Microprocessor U1 is good.

2nd Flash—Determines if the program ROM U2 is good.

3rd Flash—Determines if the program ROM U3 is good.

4th Flash—Determines if the CMOS RAM U4 is good.

5th Flash—Tests the U8 PIA-0.

6th Flash—Tests the U7 PIA-1.

7th Flash—Determines if the internal display interrupt generator U1 is good.

8th Flash—Verifies U8 & U12 operation of the Phase B switched illumination voltage.

> **NOTE:** Fuse F5 on the Power Module Assembly protects the Phase B signal to the Control Board Assembly for U8 & U12.

9th Flash—Verifies U1, U11 & U12 operation of the Phase A switched illumination voltage.

> **NOTE:** Fuse F4 on the Power Module Assembly protects the Phase A signal to the Control Board Assembly for U1, U11 & U12.

D. If the LED does not come on or does not flash, or flashes, but less than 9 times, turn power OFF. Check the fuses and if the fuses are good, replace the 6803 Control Board Assembly.

> **CAUTION:** The replacement 6803 Control Board Assembly must have the same part number or incorrect operation of the game will be the result! For additional information, see the Parts List for the Control Board Assembly on pages 10-13 thru 10-15 and the EPROM Listing on page 10-39.

E. Turn power ON. If the game is operating correctly, it is now ready for play. If the game does not operate correctly, contact the Bally-Midway Field Service Department.

LAMPS ARE ALWAYS ON OR ALWAYS OFF DURING GAME PLAY

ACTION TO TAKE:

A. With the power ON, select the LAMP TEST from the GAME CHECK-UP category with the lower right button.

NOTE: When pressed, the lower right cabinet button advances to the next test and the lower left cabinet button "backs-up" to the previous test.

B. Press the Credit/Start button to start the test.

There are two (2) Lamp Test Sequences. The first test is the ALL LAMPS test and the second test sequence is the SINGLE LAMP test. For additional information, refer to the FEATURE LAMP ASSIGNMENT ILLUSTRATION on page 9-12 for the lamp sequence.

ALL LAMPS TEST SEQUENCE

When the test is started, all feature lamps will flash on and off. The lamps will continue to flash on and off until the test is exited or another test is selected.

SINGLE LAMP TEST SEQUENCE

When the test is started, the first lamp in the Test Sequence will flash on and off. After a few seconds, the first lamp will turn off and the next lamp in the Test Sequence will flash on and off. This Test Sequence will continue for all of the feature lamps until the test is exited or another test is selected.

C. If the lamps are flashing correctly, the game is ready for play.

NOTE: The Single Lamp Test Sequence can be stopped by pressing either the lower right or the lower left button. When pressed, the top button advances to the next lamp in the test and the bottom button "backs-up" to the previous lamp in the test.

D. Carefully raise the Playfield or open the Backbox to gain access to the lamp(s).

NOTE: Before raising the Playfield, refer to the SERVICE HINTS on page 8-2, for SERVICING THE PLAYFIELD IN THE SEMI-UPRIGHT & UPRIGHT POSITIONS and, refer to SERVICING THE FRONT PLATFORM ASSEMBLY on page 8-4 and servicing the REAR PLATFORM ASSEM on pages 8-8 and 8-9.

E. Before replacing lamps that do not flash on and off, check the wiring to the lamp socket(s). If the wiring appears to be correct, replace the lamps that do not flash on and off.

F. If all of the lamps are now flashing on and off, the game is ready for play. If the lamps are not flashing on and off, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

G. Turn power ON and repeat Steps A and B. If all the lamps are flashing on and off, the game is ready for play. If the lamps do not flash on and off, contact the Bally-Midway Field Service Department.

IMPROPER DISPLAY DIGITS

I. Display digits improper on one (1) or several, but less than all Display Driver Modules.

One (1) or several segments are always off, the digits are "mottled" (spotted), or several segments or digits are always on.

ACTION TO TAKE:

A. With the power ON, select the DISPLAY TEST from the GAME CHECK-UP category with the lower right cabinet button.

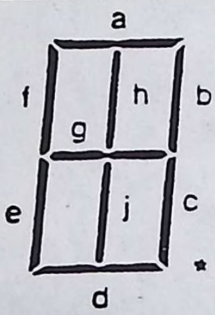
NOTE: When pressed, the lower right cabinet button advances to the next test and the lower left cabinet INITIALS button "backs-up" to the previous test.

B. Press the Credit/Start button to start the test.

If the Displays are operating correctly, the segments in the left digit in the left Display Driver Module, will turn on as indicated in the following Display Driver Module Segment Test Pattern.

DISPLAY DRIVER MODULE SEGMENT TEST PATTERN

DISPLAY CHARACTER SEGMENT DESIGNATION



DISPLAY CHARACTER SEGMENT	SEGMENT CYCLING PATTERN
f	1
a	2
b	3
c	4
d	5
e	6
g	7
h & j	8

NOTE: * = The comma segment is not tested during the DISPLAY TEST. Verification of operation can be seen during the game play or when the game is in the Attract Mode.

C. If the segments are correct in the digit, press the lower right cabinet button to advance to the next digit in the Display Driver Module. If the segments are correct, continue to press the button to test the segments in each digit on the Display Driver Modules.

D. If the segments are correct, the game is ready for play. If the segments are incorrect in any Display Driver Module, replace the Module.

WARNING: High Voltage is supplied to the Display Driver Modules from the Power Supply Module. After turning power OFF, wait a minimum of 30 seconds for the High Voltage to drain (bleed) off before replacing or servicing the Display Driver Modules.

E. Turn power ON and repeat Steps A and B. If the segments are operating correctly, the game is ready for play. If the segments are not operating correctly, contact the Bally-Midway Field Service Department.

II. All Display Driver Modules have improper display patterns.

Digits are always on or off, or the segments are always on or off, in all Modules.

ACTION TO TAKE:

A. With power ON, select the DISPLAY TEST from the GAME CHECK-UP category with lower right cabinet button. If the Displays are operating correctly, perform the Segment Test Pattern described in category I, Step A and B, on page 9-4.

B. Press the Credit /Start button to start the test.

C. If the Displays are operating correctly, the game is ready for play. If the Displays are not operating correctly, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, refer to the **CAUTION** on page 9-2.

D. Turn power ON and repeat category II, Steps A and B. If the Displays are operating correctly, the game is ready for play. If the Displays are not operating correctly, contact the Bally-Midway Field Service Department.

III. One or several Displays always off.

ACTION TO TAKE:

A. With power ON, select the DISPLAY TEST from the GAME CHECK-UP category with the ower right cabinet button.

B. Press the Credit /Start button to start the test.

C. If the first digit is operating correctly, continue to press the lower right cabinet button to test each Display Driver Module.

D. If the Test Pattern is correct, the game is ready for play. If the Test Pattern is incorrect, turn power OFF and replace the defective Display Driver Module.

NOTE: Before replacing the Display Driver Module, refer to the **WARNING** on page 9-4.

E. Turn power ON and repeat Steps A and B. If the Display Driver Module(s) are operating correctly, the game is ready for play. If the Displays are not operating correctly, contact the Bally-Midway Field Service Department.

COIL(S) OR SOLENOID(S) NOT OPERATING CORRECTLY

I. One (1) or more Coils or Solenoids do not energize (pulse on) during game play. For additional information, refer to the COIL & SOLENOID ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.

ACTION TO TAKE:

A. With power ON, select the COIL TEST from the GAME CHECK-UP category with the lower righ button.

NOTE: When pressed, the lower right cabinet button advances to the next test and the lower left cabinet button "backs-up" to the previous test.

B. Press the Credit /Start button to start the test.

When the test is started, the SINGLE COIL test will be displayed, the first Coil or Solenoid in the Test Sequence will momentarily pulse on, then off. Also, the name of each Coil or Solenoid, I.D. number, output number, connector number and pin number, are displayed as each one is tested. This information remains displayed until the test is exited.

100,000

3

NOTE: Press the lower right cabinet button to advance to the next Coil or Solenoid in the test, and press the lower left cabinet button to pulse the same Coil or Solenoid in the test.

C. Continue the COIL TEST until all Coils or Solenoids have been tested.

NOTE 1: If the majority of the Coils or Solenoids do not operate correctly, check the Playfield fuse to see if it's blown. The fuse is located on the bottom of the Playfield, near the Flipper Assemblies. See the **NOTE** in Step D before proceeding.

NOTE 2: The General Illumination lamp circuitry and the Flipper Solenoid circuitry are tested during the COIL TEST. For additional information, see GENERAL ILLUMINATON LAMPS on this page and see FLIPPER SOLENOIDS on page 9-7.

D. Carefully raise the Playfield to gain access to the Coils or Solenoids, and inspect the wiring.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2, 8-4, 8-8 and 8-9.

E. If a lead wire is broken off, repair it and repeat Step C.

F. If the Coil or Solenoid is operating correctly, the game is ready for play. If the wiring is correct and the Coil or Solenoid does not operate, turn the game OFF and replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

NO GENERAL ILLUMINATION LAMPS

The General Illumination Lamp Test is performed during the COIL TEST. The lamps are controlled by the Auxiliary Coil Driver P.C. Board Assembly. The board is located on the bottom of the Playfield. For additional information, refer to the GENERAL ILLUMINATION LAMP ASSIGNMENT NUMBER ILLUSTRATION on page 9-13.

ACTION TO TAKE:

A. Repeat category I, Steps A, B and C. The General Illumination lamps will turn off, and then turn back on, during the COIL TEST when output port number 14 is tested.

B. If the lamps turn off, and then back on, the General Illumination Circuitry is operating correctly. If the lamps do not turn off or are always off, raise the Playfield to gain access to the Auxiliary Coil Driver P.C. Board Assembly.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2, 8-4, 8-8 and 8-9.

C. Press the lower left cabinet button and observe if the relay is energizing on the P.C. board. If the relay is working, check to see if the lamps are blown, and replace those that are blown.

D. Repeat Step C. If the lamps turn off, then on, the circuitry is operating correctly. If the lamps do not turn off or are always off, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

E. Repeat Steps A, B and C. If the lamps turn off, and then on, the circuitry is operating correctly. If the lamps do not turn off or do not turn on, contact the Bally-Midway Field Service Department.

NO FLIPPER SOLENOIDS

The Flipper Solenoid Test is performed during the COIL TEST. The Solenoids are controlled by the K1 relay on the 6803 Control Board Assembly. For additional information, refer to the COIL & SOLENOID ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.

ACTION TO TAKE:

A. Repeat category I, steps A, B and C. The Flipper Solenoids will not energize when the K1 relay energizes on the Control Board Assembly, when output port 15 (Flipper Test) is tested.

B. Press the lower left cabinet button to energize the K1 relay. Press the cabinet Flipper buttons while the K1 relay is energized. If the Flipper Solenoids operate correctly, the game is ready for play. If the Solenoids do not operate correctly, raise the Playfield and inspect the wiring to the Solenoids.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2, 8-4, 8-8 & 8-9.

C. If the wiring is correct, replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

D. Repeat Steps A, B and C. If the Coils or Solenoids are operating correctly, the game is ready for play. If they do not operate correctly, contact the Bally-Midway Field Service Department.

II. Coils or Solenoids always on.

Some Coils and Solenoids are designed to be energized (on) momentarily rather than continuously. Those that are designed to be energized momentarily, are subject to being damaged when energized continuously.

Limit the troubleshooting on time to **one minute with power ON** and **five minutes with power off.** Repeat this process as required and replace any Coils or Solenoids that are damaged.

When troubleshooting Coil and Solenoid circuits, **be advised** that a constantly energized momentary duty Coil or Solenoid, will "**blow**" the Playfield fuse in a few seconds. To avoid replacing the fuse repeatedly, isolate the faulty Coil or Solenoid circuit as soon as power is turned on.

ACTION TO TAKE:

A. With power ON, select the COIL TEST from the GAME CHECK-UP category with the lower right cabinet button.

NOTE: When pressed, the lower right cabinet button advances to the next test and the lower left cabinet button "backs-up" to the previous test.

B. Press the Credit/Start button to start the test.

When the test is started, the SINGLE COIL test will be displayed, the first Coil or Solenoid in the Test Sequence will momentarily pulse on, then off. Also, the name of each Coil and Solenoid, I.D. number, output port number, connector number and pin number, is displayed as each one is tested. This information remains displayed until the test is exited.

NOTE: Press the lower right cabinet button to advance to the next Coil or Solenoid in the test, and press the lower left cabinet button to pulse the same Coil or Solenoid in the test.

C. Continue the COIL TEST until all Coils or Solenoids have been tested.

D. If the Coils or Solenoids are operating correctly, the game is ready for play. If they are not operating correctly, raise the Playfield to gain access to the Coils or Solenoids.

E. Carefully raise the Playfield to gain access to the Coils or Solenoids, and inspect the wiring.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2, 8-4, 8-8 & 8-9.

F. If a lead wire is broken off, repair it and repeat Step C.

G. If the Coil or Solenoid is operating correctly, the game is ready for play. If the wiring is correct and the Coil or Solenoid does not operate correctly, turn the game OFF and replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

H. Repeat Steps A, B and C. If the Coils or Solenoids are operating correctly, the game is ready for play. If they are not operating correctly, turn the game OFF and contact the Bally-Midway Field Service Department.

NO SOUND

ACTION TO TAKE:

A. With power ON, select the SWITCH TEST from the GAME CHECK-UP category with the lower right cabinet button.

B. Press the Credit/Start button to start the test.

C. Turn the Volume Control POT (Potentiometer) on the front door to the maximum counter-clockwise (left) position.

D. Operate any switch on the Playfield. When the switch is operated, a sound will be heard. If no sound is heard, check to ensure that the speaker lead wire is connected to speaker terminal J2-2 and the speaker return wire is connected to terminal J2-1.

E. Repeat Step D. If sound is heard, the game is ready for play. If no sound is heard, check the fuses on the Power Module Assembly.

F. Turn power OFF and open the Backbox. Locate the LED (Light Emitting Diode) on the Sound Module Assembly. For additional information, see the SOUND BOARD SELF-TEST SEQUENCE below.

SOUND BOARD SELF-TEST SEQUENCE

1st Flash—Determines if the ROM U11 is good.
2nd Flash—Determines if the ROM U12 is good.
3rd Flash—Determines if the ROM U13 is good.
4th Flash—Determines if the ROM U14 is good.
5th Flash—Determines if the RAM's U9 & U10 are good.
6th Flash—Test the PIA U7.

G. Turn power ON. The LED must flash 6 times to indicate that the Sound Module is good. The correct sequence of flashes are: "flash, pause, flash, then flash four (4) more times." The LED goes out after the 6th flash.

H. If the LED does not come on when the game is powered up, or flashes less that 6 times, turn power OFF and replace the Sound Module Assembly.

CAUTION: The replacement Sound Module Assembly must have the same part number or incorrect operation will be the result! See the Parts List for the Sound Module Assembly on pages 10-20 thru 10-22 and the EPROM Listing on page 10-39.

J. Turn power ON and repeat Steps A, B, C and D. If sound is heard, the game is ready for play. If no sound is heard, contact the Bally-Midway Field Service Department.

SWITCHES DO NOT SCORE

ACTION TO TAKE:

A. Turn power ON and select the SWITCH TEST from the GAME CHECK-UP category with the lower right cabinet button. For additional information, refer to the SWITCH ASSIGNMENT NUMBER ILLUSTRATION on page 9-10.

B. Press the Credit/Start button to start the test.

C. If no switches are stuck or held closed, ALL SWITCHES OPEN is displayed. If any switch is stuck or held closed, the name of the switch will be displayed.

D. Carefully raise the Playfield to gain access to the switches.

NOTE: Before raising the Playfield, see the SERVICE HINTS on pages 8-2, 8-4, 8-8 and 8-9.

E. Visually inspect the Switch Assembly. If the contacts are closed, adjust them to a 1/16" gap between the switch contacts. If ALL SWITCHES OPEN is displayed after the adjustment is made, the game is ready for play. If the name of the switch is displayed after inspection and adjustment, turn power OFF.

F. Replace the 6803 Control Board Assembly.

NOTE: Before replacing the Control Board Assembly, see the **CAUTION** on page 9-2.

G. Repeat Steps A, B and C. If ALL SWITCHES OPEN is displayed, the game is ready to play. If the name of the switch is displayed, contact the Bally-Midway Field Service Department.

4 POSITION DETECTOR & 4 POSITION EMITTER P.C. BOARDS TEST PROCEDURE

CHECK FU1 or PLAYFIELD FUSE message displayed during game play and the Playfield Fuse is not blown. This message is a clue that the Detector and/or Emitter P.C. boards are not functioning properly. This condition is usually resolved by touching up the solder connections on the P.C. boards.

ACTION TO TAKE:

To test the integrity of the 4 Position Detector & Emitter P.C. boards, enter the Test Mode and select the GAME CHECKUP category. Next, using either lower cabinet push-button, select the SWITCH TEST. The following procedure is recommended to test the boards.

A. Place all four (4) balls into the Ball Trough Assembly. The following messages will be displayed in sequence.

First message = BALL TROUGH 3 CLOSED
Second message = BALL TROUGH 2 CLOSED
Third message = BALL TROUGH 1 CLOSED

NOTE: Three (3) of the games balls are used to play the game and the fourth ball is used as an index ball. The fourth ball is not detected by the P.C. boards, but the three (3) games balls, are detected.

The P.C. Board Assemblies do not use the fourth detector and emitter; however, the boards are designed to be interchangeable with games that require three (3) or four (4) detectors and emitters.

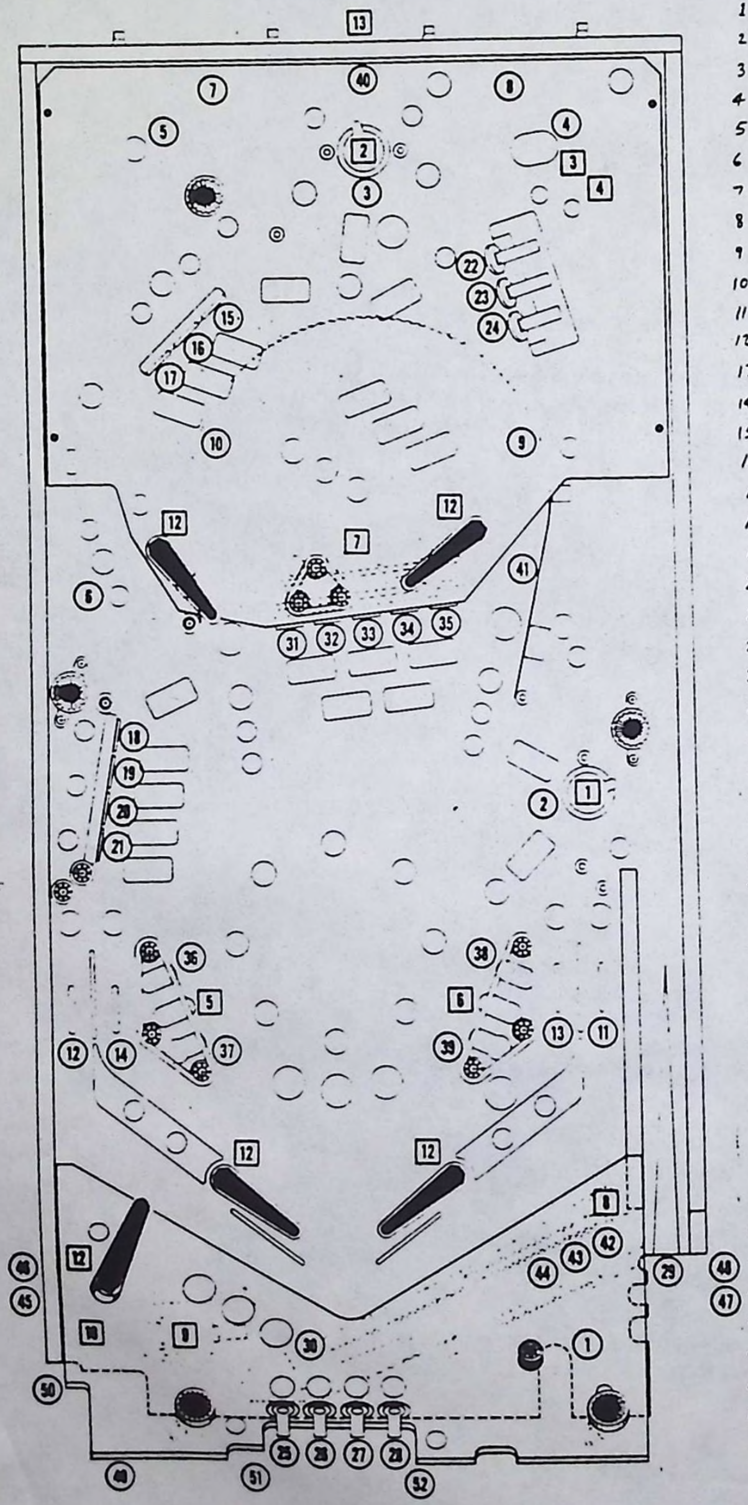
These messages will continue to display in the same sequence until the test is exited or a problem exist. It is advisable to test the P.C. boards with the four (4) balls and without them. If the messages do not display in the sequence as described above with the balls installed or if any of these messages appear with the balls removed, perform the following checks.

B. Wiggle (shake) the connectors and check the components on the P.C. boards to ensure that they are making good contact with the board and connectors. DO NOT pull on the cable wires to disconnect connectors. Touch up any cold solder connections if necessary.

C. If the correct messages are displayed, the P.C. boards are functioning properly.

D. If the messages do not display in the sequence described in Step A, contact the *Bally-Midway* Field Service Department.

FIGURE A. PLAYFIELD ASSEMBLY: TOP VIEW WITH COIL, SOLENOID & SWITCH ASSIGNMENT NUMBER TABLE



○ H07 SWITCH ASSEMBLY IDENTIFICATION TABLE

SELF TEST #	SEQUENCE
1	FAST LINE
2	SAUCER RIGHT
3	SAUCER LEFT
4	GATE 1
5	DOWNHILL
6	HILL CLIMB RAMP
7	LEFT TOP LOOP
8	RIGHT TOP LOOP
9	TUNNEL RIGHT
10	TUNNEL LEFT
11	OUTLANE RIGHT
12	OUTLANE LEFT
13	FLIPPER LANE RIGHT
14	FLIPPER LANE LEFT
15	BIG
16	BAD
17	BOG
18	COLD
19	WET
20	ROCKY
21	RAPIDS
22	ROCKS
23	MOON
24	MEAN
25	RAIN 'R'
26	RAIN 'A'
27	RAIN 'I'
28	RAIN 'N'
29	SHOOTER LANE
30	OUT HOLE
31	DROP TARGET 1
32	DROP TARGET 2
33	DROP TARGET 3
34	DROP TARGET 4
35	DROP TARGET 5
36	SLING SHOT LEFT
37	SLING SHOT LEFT
38	SLING SHOT RIGHT
39	SLING SHOT RIGHT
40	CLIFF HANGER
41	HIGHWAY 93 RAMP
42	BALL TROUGH 3
43	BALL TROUGH 2
44	BALL TROUGH 1
45	LOWER LEFT CABINET
46	UPPER LEFT CABINET
47 *	LOWER RIGHT CABINET
48 *	UPPER RIGHT CABINET
49 *	CREDIT
50 *	TILT
51 **	COINS LEFT
52 **	COINS RIGHT

□ H07 SOLENOID IDENTIFICATION TABLE

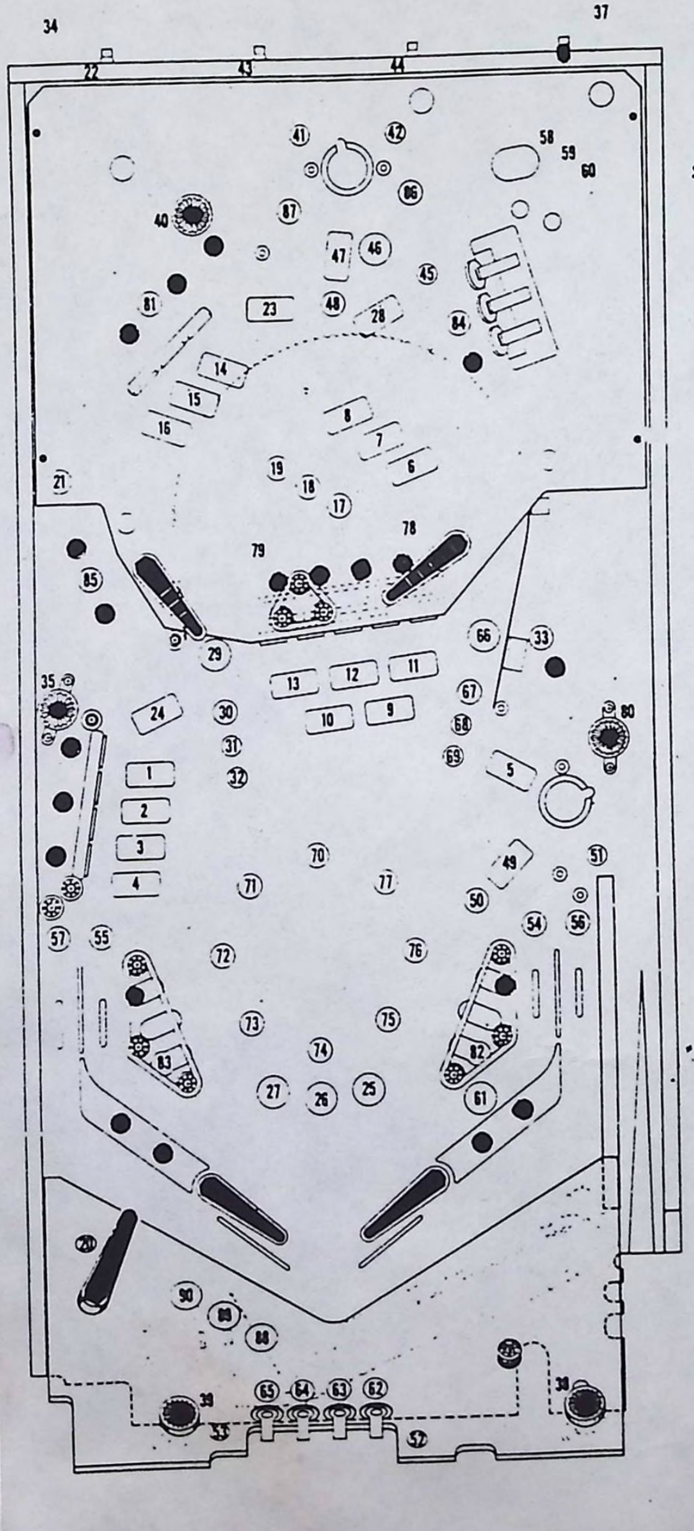
SELF TEST #	SEQUENCE
1	SAUCER RIGHT
2	SAUCER TOP
3	GATE DOWN
4	GATE RAISE
5	SLING LEFT
6	SLING RIGHT
7	DROP TARGET RESET
8	EJECT TO SHOOTER
9	OUTHOLE
10	KNOCKER
11	GENERAL ILLUMINATION CONTROL
12	FLIPPERS
13	INCANDESCENT CONTROL

* = CABINET SWITCH

** = DOOR SWITCH

NOTE: 1. THE SEQUENCE NUMBERS SHOWN HERE ARE USED AS AN AID IN LOCATING A FAULTY SOLENOID OR SWITCH.

FIGURE B. PLAYFIELD ASSEMBLY: TOP VIEW WITH FEATURE LAMP ASSIGNMENT NUMBER TABLE



FEATURE LAMP ASSIGNMENT NUMBERS

SEQUENCE	DESCRIPTION	SEQUENCE	DESCRIPTION
1	COLD	46	SPECIAL TEST
2	WET	47	TOP SAUCER 2
3	ROCKY	48	TOP SAUCER 1
4	RAPIDS	49	RIGHT SAUCER 2
5	HIGHWAY 93 JUMP	50	RIGHT SAUCER 1
6	ROCKS	51	DOWNHILL 7
7	MOON	52	DOWNHILL 6
8	MEAN	53	DOWNHILL 5
9	SWAMP	54	RETURN
10	SUCKIN	55	RETURN
11	BIKE	56	OUTLANE RIGHT
12	ENDIN	57	OUTLANE LEFT
13	NEVER	58	START RED
14	BIG	59	START YELLOW
15	BAD	60	START GREEN
16	BOGS	61	SPSA (SHOOT AGAIN)
17	BONUS 4X	62	RAIN "N"
18	BONUS 3X	63	RAIN "I"
19	BONUS 2X	64	RAIN "A"
20	DOWNHILL 4	65	RAIN "R"
21	DOWNHILL 3	66	TUNNEL RIGHT 4
22	DOWNHILL 2	67	TUNNEL RIGHT 3
23	DOWNHILL 1	68	TUNNEL RIGHT 2
24	HILL CLIMB	69	TUNNEL RIGHT 1
25	LAP 3	70	CLIFF SECTION
26	LAP 2	71	DOWNHILL SECTION
27	LAP 1	72	BOGS SECTION
28	CLIFF-HANGER	73	HILL CLIMB SECTION
29	TUNNEL LEFT 4	74	RAPIDS SECTION
30	TUNNEL LEFT 3	75	HIGHWAY 93 SECTION
31	TUNNEL LEFT 2	76	SWAMP SECTION
32	TUNNEL LEFT 1	77	ROCKS SECTION
33	HIGHWAY 93 BRITE	78	SWAMP BRITE RIGHT
34	BACKBOX RIGHT	79	SWAMP BRITE LEFT
35	RAPIDS BRITE	80	RIGHT SCREEN BRITE
36	SHOOTER BRITE	81	BOGS BRITE
37	BACKBOX RIGHT	82	SLINGSHOT RIGHT BRITE
38	FAST LINE BRITE	83	SLINGSHOT LEFT BRITE
39	BOTTOM FLIPPER BRITE	84	ROCK BRITE
40	DOWNHILL BRITE	85	HILL CLIMB BRITE
41	TOP SAUCER LEFT	86	RIGHT TOP LOOP
42	TOP SAUCER RIGHT	87	LEFT TOP LOOP
43	CLIFF 3	88	RAIN 4X
44	CLIFF 2	89	RAIN 3X
45	CLIFF 1	90	RAIN 2X

NOTE: THERE ARE 21 GENERAL ILLUMINATION LAMP LOCATIONS IDENTIFIED WITH A "SHADED CIRCLE" ON THE ILLUSTRATION.

SECTION 10

COMPONENT LAYOUTS, SCHEMATICS & WIRING DIAGRAMS

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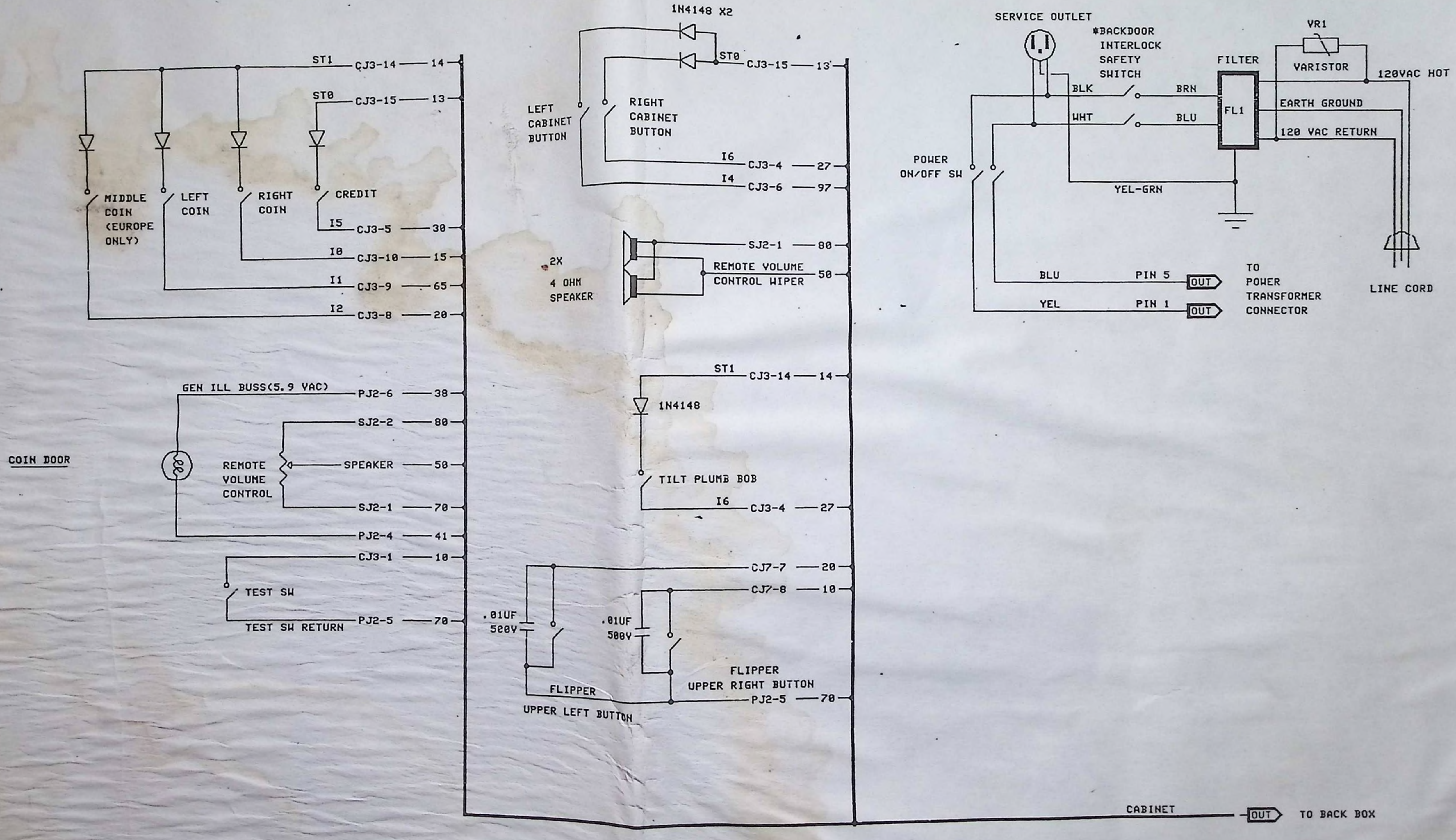
FOUR POSITION DETECTOR P.C. BOARD - COMPONENT LAYOUT & SCHEMATIC 10-37

EPROM LIST 10-39



CABINET

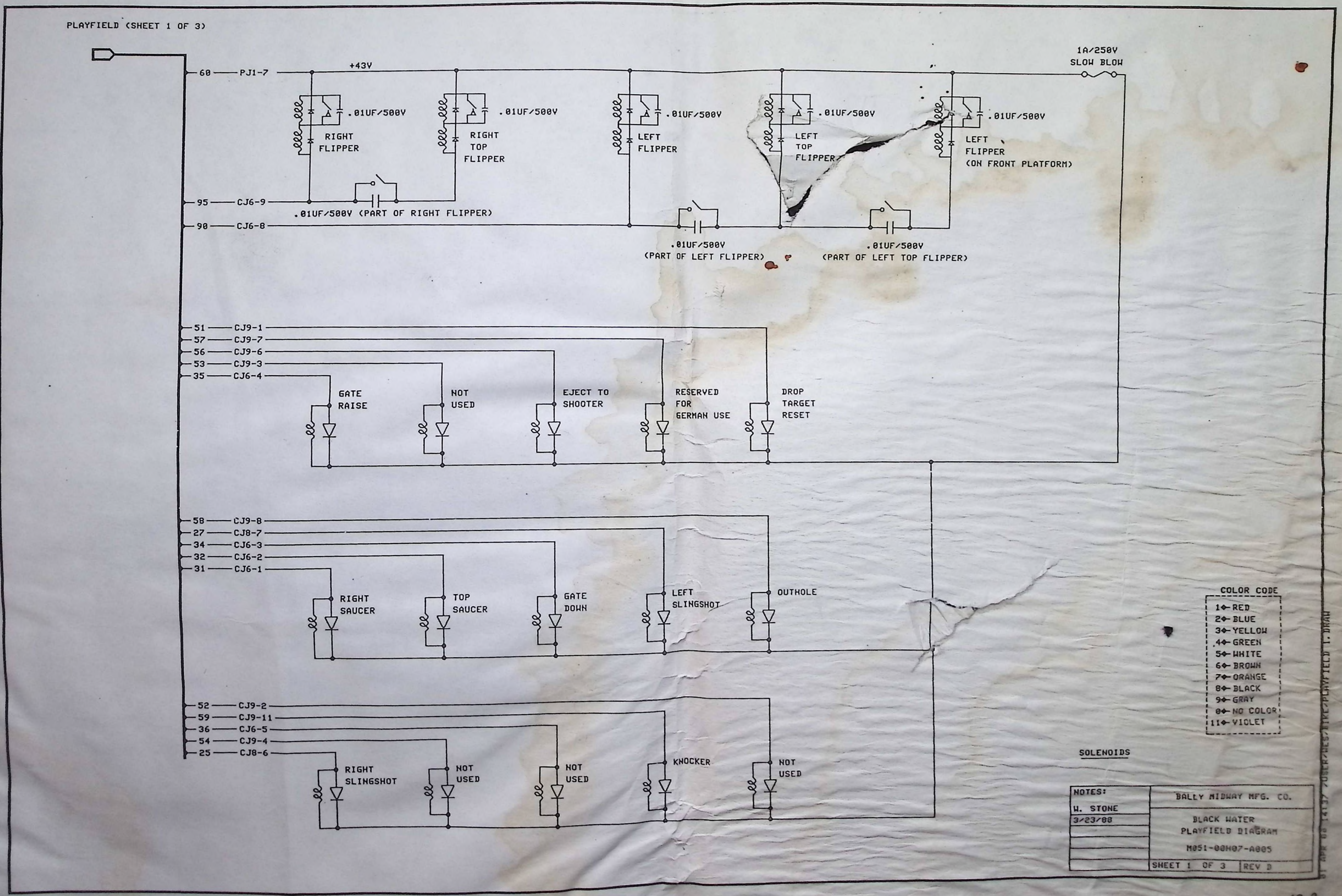
* OPTIONAL- NOT USED IN ALL GAMES

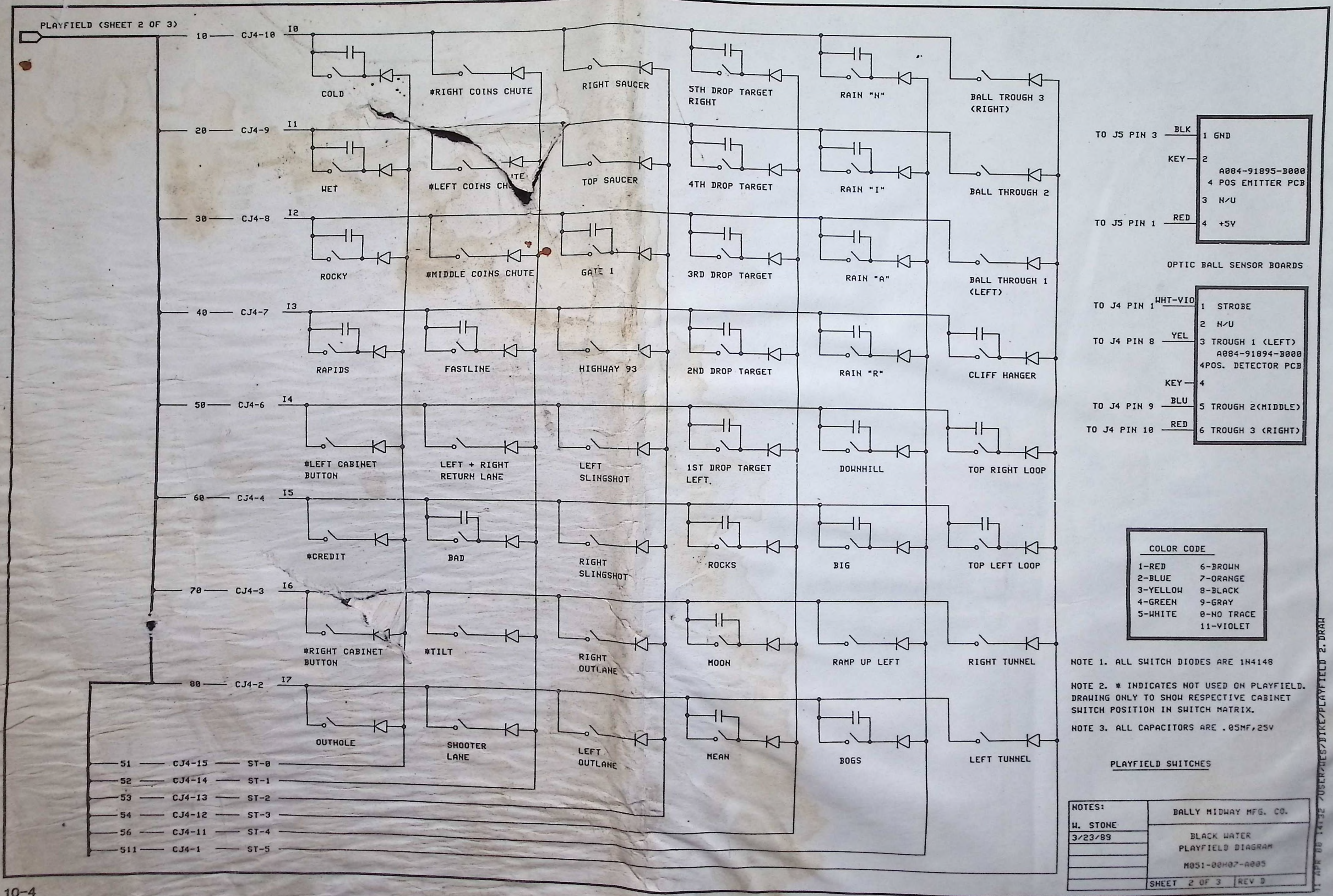
COLOR CODE

1=RED	7=ORANGE
2=BLUE	8=BLACK
3=YELLOW	9=GRAY
4=GREEN	0=NO TRACE
5=WHITE	11-VIOLET
6=BROWN	

NOTES: W STONE	BALLY MIDWAY MFG. CO.
3/22/88	BLACK WATER CABINET DIAGRAM M051-00H07-A003
	SHEET 1 OF 1 — REV A

22 MAR 88 09:21 /USER/HES/BIKE/CABINET 1.DRAW


PLAYFIELD (SHEET 1 OF 3)
60 — PJ1-7
+43V
.01UF/500V
RIGHT FLIPPER
.01UF/500V
RIGHT TOP FLIPPER
.01UF/500V
LEFT FLIPPER
.01UF/500V
LEFT TOP FLIPPER
.01UF/500V
LEFT FLIPPER (ON FRONT PLATFORM)
1A/250V SLOW BLOW
95 — CJ6-9
.01UF/500V (PART OF RIGHT FLIPPER)
90 — CJ6-8
.01UF/500V (PART OF LEFT FLIPPER)
.01UF/500V (PART OF LEFT TOP FLIPPER)
51 — CJ9-1
57 — CJ9-7
56 — CJ9-6
53 — CJ9-3
35 — CJ6-4
GATE RAISE
NOT USED
EJECT TO SHOOTER
RESERVED FOR GERMAN USE
DROP TARGET RESET
58 — CJ9-8
27 — CJ8-7
34 — CJ6-3
32 — CJ6-2
31 — CJ6-1
RIGHT SAUCER
TOP SAUCER
GATE DOWN
LEFT SLINGSHOT
OUTHOLE
52 — CJ9-2
59 — CJ9-11
36 — CJ6-5
54 — CJ9-4
25 — CJ8-6
RIGHT SLINGSHOT
NOT USED
NOT USED
KNOCKER
NOT USED
COLOR CODE
1◆RED
2◆BLUE
3◆YELLOW
4◆GREEN
5◆WHITE
6◆BROWN
7◆ORANGE
8◆BLACK
9◆GRAY
0◆NO COLOR
11◆VIOLET
SOLENOIDS
NOTES:
W. STONE
3/23/88
BALLY MIDWAY MFG. CO.
BLACK WATER
PLAYFIELD DIAGRAM
M051-00H07-A005
SHEET 1 OF 3
REV D
01 APR 88 14:37 /USER/HES/BIKE/PLAYFIELD 1.DRAW



COLOR CODE

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET

NOTE 1. ALL SWITCH DIODES ARE 1N4148

NOTE 2. * INDICATES NOT USED ON PLAYFIELD. DRAWING ONLY TO SHOW RESPECTIVE CABINET SWITCH POSITION IN SWITCH MATRIX.

NOTE 3. ALL CAPACITORS ARE .05MF, 25V

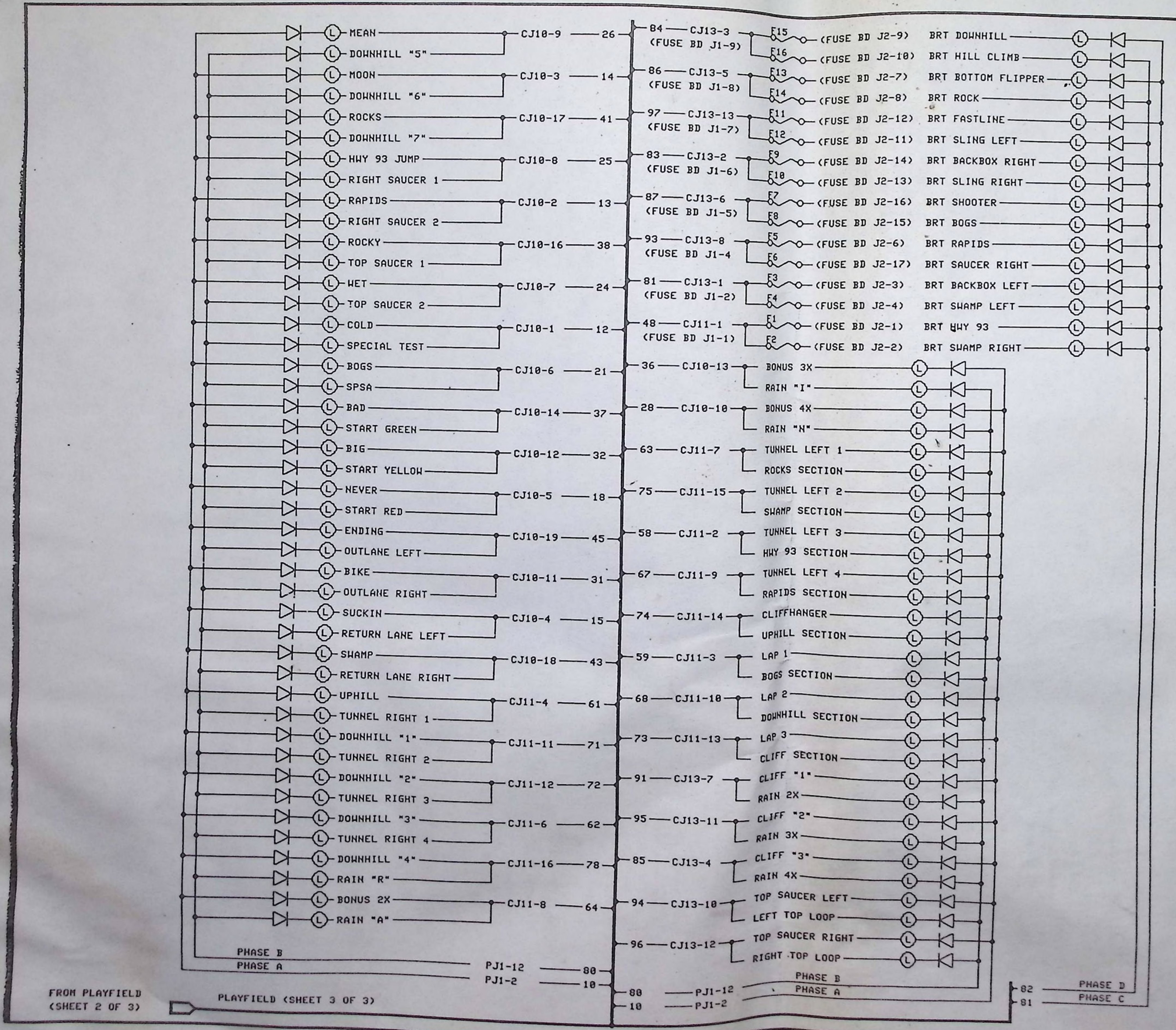
PLAYFIELD SWITCHES

NOTES:
W. STONE
3/23/89

BALLY MIDWAY MFG. CO.

BLACK WATER
PLAYFIELD DIAGRAM
M051-00H07-A005

SHEET 2 OF 3
REV D



COLOR CODE

1→RED
2→BLUE
3→YELLOW
4→GREEN
5→WHITE

6→BROWN
7→ORANGE
8→BLACK
9→GRAY
0→NO COLOR
11→VIOLET

NOTE: DIODES ARE 1N4004

ALL FUSES IN FUSEBOARD ARE 3/4A MDQ/250V AND LOCATED IN THE BACKBOX

FEATURE LIGHTS AND BRIGHT LIGHTS

NOTES:
W. STONE
3/23/88

BALLY MIDWAY MFG. CO.

BLACK WATER
PLAYFIELD DIAGRAM

M051-00H07-A005

SHEET 3 OF 3 REV D

01 APR 88 14:30 /USER/WES/BIKE/PLAYFIELD 3.DRAW

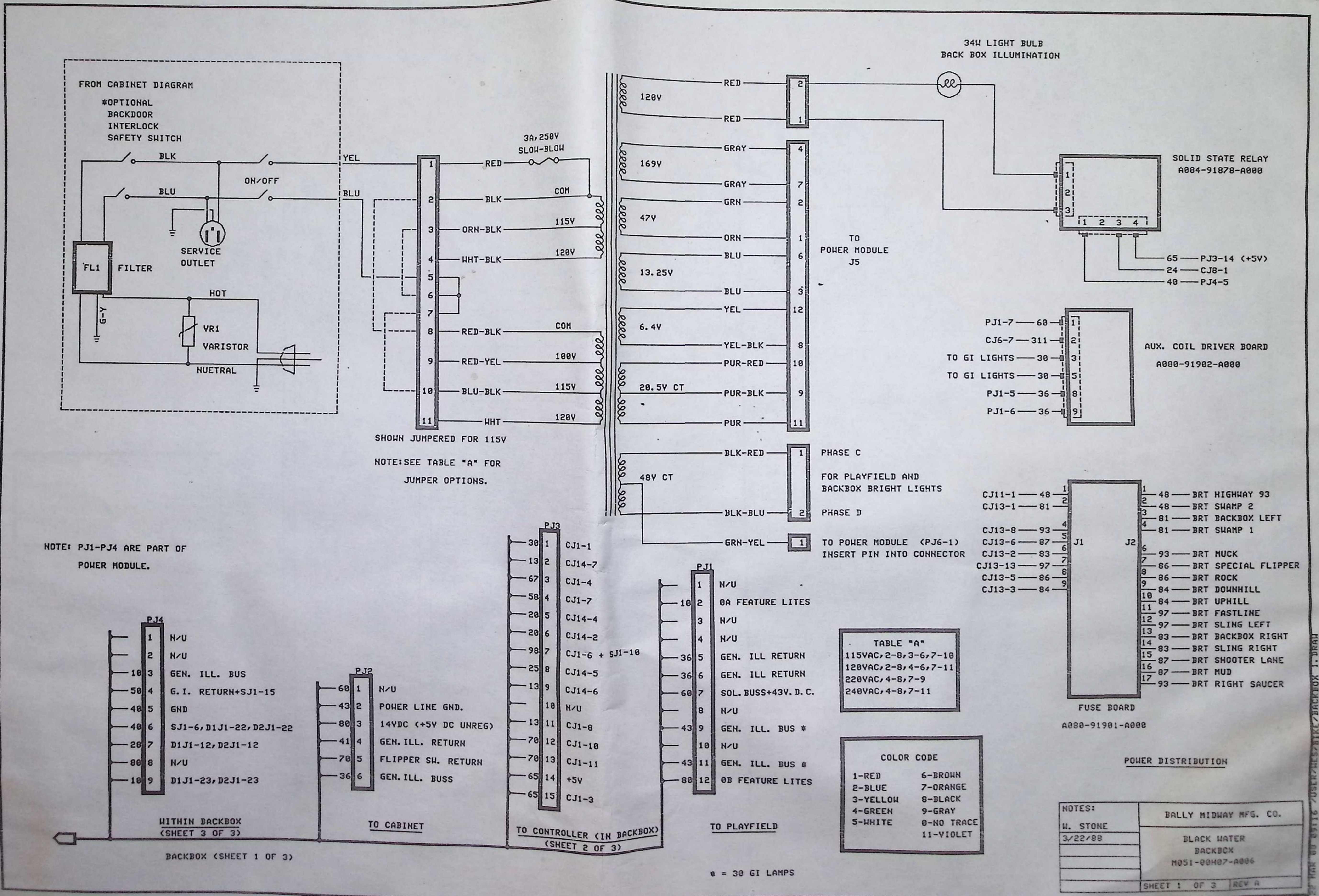


TABLE "A"
115VAC,2-8,3-6,7-10
120VAC,2-8,4-6,7-11
220VAC,4-8,7-9
240VAC,4-8,7-11

COLOR CODE

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET

NOTES: W. STONE	BALLY MIDWAY MFG. CO.
3/22/88	BLACK WATER BACKBOX M051-00H07-A006
	SHEET 1 OF 3 REV A

PLAYFIELD INPUTS, BACKBOX INPUTS & OUTPUTS
(SHEET 2 OF 3)

	CJ-10	"A"PHASE	"B"PHASE
12	1	COLD	SPECIAL TEST
13	2	RAPIDS	RIGHT SAUCER 2
14	3	MOON	DOWNHILL 6
15	4	SUCKIN	RETURNLANE LEFT
18	5	NEVER	START RED
21	6	BOGS	SPSA
24	7	WET	TOP SAUCER 2
25	8	HWY. 93 JUMP	RIGHT SAUCER 1
26	9	MEAN	DOWNHILL 5
28	10	BONUS 4X	RAIN "N"
31	11	BIKE	OUTLANE RIGHT
32	12	BIG	START YELLOW
36	13	BONUS 3X	RAIN "I"
37	14	BAD	START GREEN
	15	KEY	
38	16	ROCKY	TOP SAUCER 1
41	17	ROCKS	DOWNHILL 7
43	18	SWAMP	RETURNLANE RIGHT
45	19	ENDING	OUTLANE LEFT

	CJ-11	"A"PHASE * DENOTES "C" PHASE	"B"PHASE ** DENOTES "D" PHASE
48	1	BRT HWY 93 *	BRT SWAMP RIGHT **
58	2	TOWN 3	HIGHWAY 93 SECTION
59	3	LAP #1	BOGS SECTION
61	4	UPHILL	TUNNEL RIGHT 1
	5	KEY	
62	6	DOWNHILL 3	TUNNEL RIGHT 4
63	7	TUNNEL LEFT 1	ROCKS SECTION
64	8	BONUS 2X	RAIN "A"
67	9	TUNNEL LEFT 4	RAPIDS SECTION
68	10	LAP #2	DOWNHILL SECTION
71	11	DOWNHILL 1	TUNNEL RIGHT 2
72	12	DOWNHILL 2	TUNNEL RIGHT 3
73	13	LAP #3	CLIFF SECTION
74	14	CLIFFHANGER	UPHILL
75	15	TOWN LEFT 2	SWAMP SECTION
78	16	DOWNHILL 4	RAIN "R"

	CJ-12	"A"PHASE	"B"PHASE
	1		
	2		
	3		
	4		
	5	KEY	
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		

	CJ-13	"A"PHASE * DENOTES "C" PHASE	"B"PHASE ** DENOTES "D" PHASE
81	1	BRT B. BOX LT. *	BRT SWAMP LFT **
83	2	BRT B. BOX RT. *	BRT SLING RT. **
84	3	BRT DOWNHILL *	BRT UPHILL**
85	4	CLIFF 3	RAIN 4X
86	5	BRT BTM FLIP *	BRT ROCK**
87	6	BRT SHOOTER*	BRT BOGS **
91	7	CLIFF 1	RAIN 2X
93	8	BRT MUCK*	BRT SAUCER RT. **
	9	KEY	
94	10	TOP SAUCER LEFT	LEFT TOP LOOP
95	11	CLIFF 2	RAIN 3X
96	12	TOP SAUCER RGT	RIGHT TOP LOOP
97	13	BRT_FASTLINE*	BRT SLING LT. **

PLAYFIELD & BACKBOX LAMP OUTPUTS

	CJ-6	
31	1	RIGHT SAUCER
32	2	TOP SAUCER
34	3	GATE DOWN
35	4	GATE RAISE
36	5	
	6	KEY
311	7	G. I. CONTROL
90	8	LEFT FLIPPER
95	9	RIGHT FLIPPER

	CJ-8	
24	1	INCONDESCENT CONTROL
	2	
	3	KEY
	4	
	5	
25	6	RIGHT SLINGSHOT
27	7	LEFT SLINGSHOT

	CJ-7	
	1	
	2	
	3	
	4	
	5	KEY
	6	
20	7	LEFT FLIPPER SWITCH
10	8	RIGHT FLIPPER SWITCH

CABINET SWITCHES

	CJ-9	
51	1	DROP TARGET RESET
52	2	
53	3	
54	4	
	5	KEY
56	6	BALL EJECT
57	7	RESERVED FOR GERMAN
58	8	OUTHOLE
	9	
24	10	
59	11	KNOCKER

SOLENOID OUTPUTS TO PLAYFIELD

	CJ-5	
10	1	5V
	2	
80	3	GROUND
	4	
	5	KEY
	6	
20	7	SJ1-1
25	8	SJ1-2
28	9	SJ1-3
21	10	SJ1-4
	11	
	12	
	13	
	14	
27	15	SJ1-8

SOUND INFO. OUTPUT
(SHEET 3 OF 3)

	CJ-4	
511	1	ST5
80	2	I7
70	3	I6
60	4	I5
	5	KEY
50	6	I4
40	7	I3
30	8	I2
20	9	I1
10	10	I0
56	11	ST4
54	12	ST3
53	13	ST2
52	14	ST1
51	15	ST0

PLAYFIELD SWITCHES
(TO PLAYFIELD
SHEET 2 OF 3)

	CJ-3	
10	1	TEST BUTTON
	2	
	3	KEY
27	4	I6
30	5	I5
97	6	I4
21	7	I3
20	8	I2
65	9	I1
15	10	I0
	11	
35	12	ST3
74	13	ST2
14	14	ST1
13	15	ST0

CABINET SWITCHES

	CJ-2	
30	1	D1J1-16 + D2J1-16
14	2	D1J1-3, D1J1-14, D2J1-3
16	3	D1J1-5, D2J1-5, D1J1-11
21	4	D1J1-7, D2J1-7, D2J1-14
23	5	D1J1-8, D2J1-8, D2J1-11
20	6	D1J1-6, D2J1-6
15	7	D1J1-4, D2J1-4
13	8	D1J1-2, D2J1-2
12	9	D1J1-1, D2J1-1
	10	N/U
	11	N/U
38	12	D2J1-9
24	13	D1J1-9, D1J1-21, D2J1-21
35	14	D1J1-20, D2J1-20
	15	KEY
34	16	D1J1-19, D2J1-19
32	17	D1J1-18, D2J1-18
31	18	D1J1-17, D2J1-17
	19	N/U

DIGITAL DISPLAY OUTPUTS
(SHEET 3 OF 3)

	CJ-1	
30	1	PJ3-1
	2	
65	3	PJ3-15
67	4	PJ3-3
	5	KEY
98	6	PJ3-7
58	7	PJ3-4
13	8	PJ3-11
	9	
70	10	PJ3-12
70	11	PJ3-13
	12	

	CJ-14	
	1	
20	2	PJ3-6
	3	KEY
20	4	PJ3-5
25	5	PJ3-8
13	6	PJ3-9
13	7	PJ3-2

POWER INPUTS
(SHEET 1 OF 3)

BACKBOX CABLE DISTRIBUTION

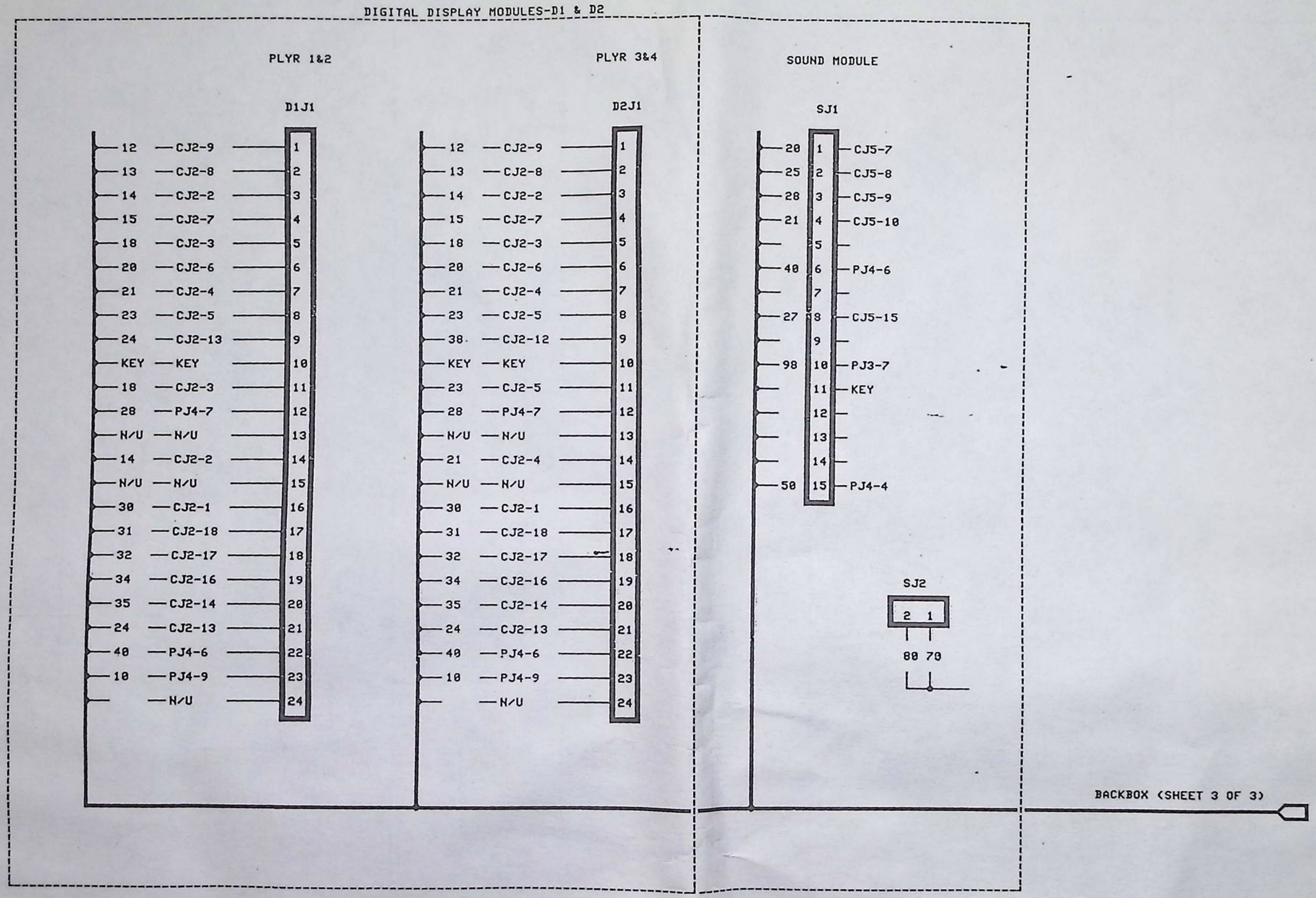
COLOR CODE	
1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GRAY
5-WHITE	0-NO TRACE
	11-VIOLET

NOTES

CJ-12 NOT USED
BRIGHT LIGHTS TYPE 912 BULBS (C&D PHASE)
OTHER LIGHTS TYPE 555 BULBS (A&B PHASE)
CJ1 THROUGH CJ14 LOCATED ON CONTROLLER BOARD

NOTES:	BALLY MIDWAY MFG. CO.	
W. STONE	BLACK WATER BACKBOX M051-00H07-A006	
3/22/88		
	SHEET 2 OF 3	REV A

[illegible] MAR 88 09:10 /USER/WES/BIKE/BACKBOX 2.DRAW

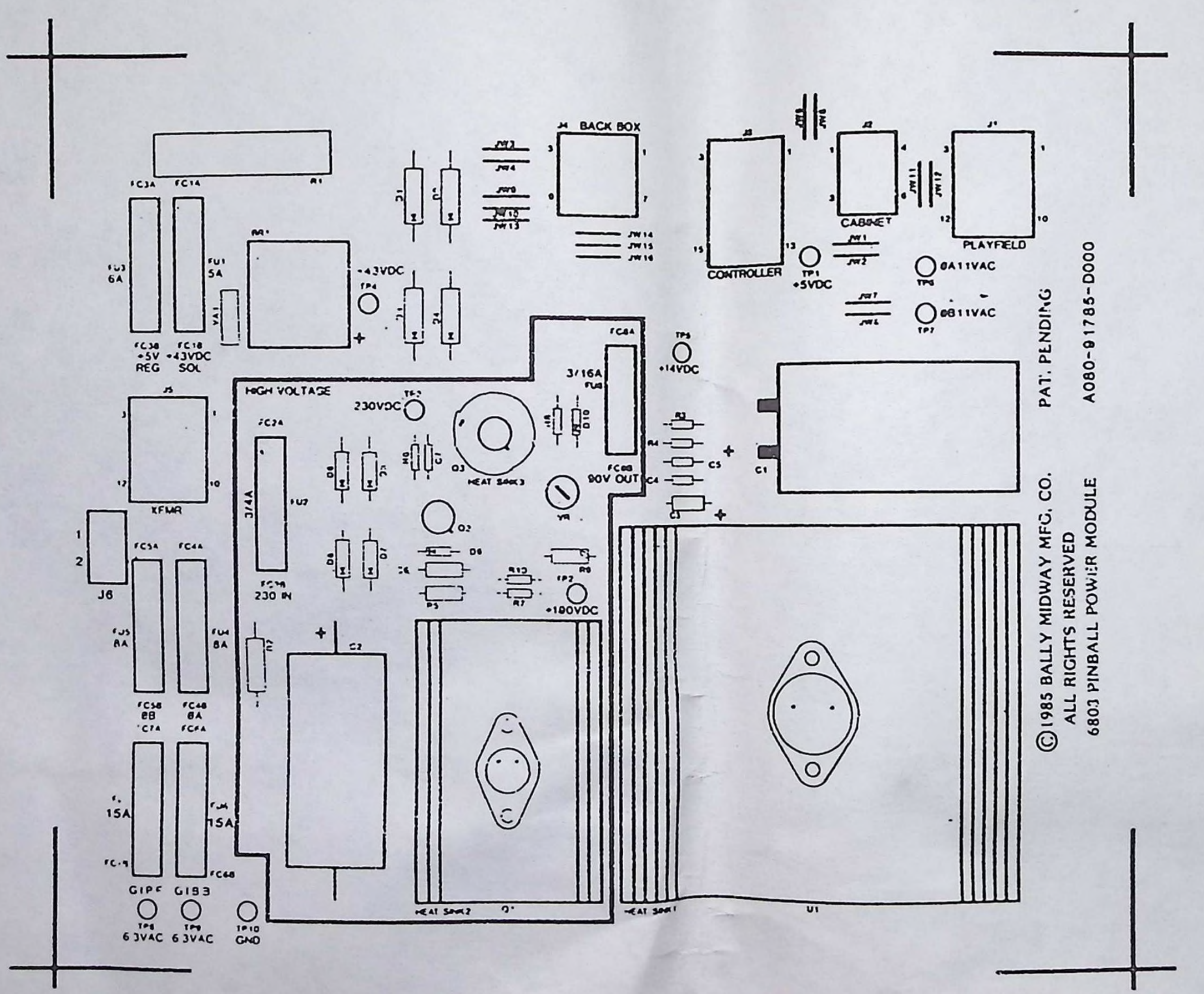


DISPLAY MODULES & SOUND MODULE

COLOR CODE

1 - RED	6 - BROWN
2 - BLUE	7 - ORANGE
3 - YELLOW	8 - BLACK
4 - GREEN	9 - GRAY
5 - WHITE	0 - NO TRACE
	11 - VIOLET

NOTES:	BALLY MIDWAY MFG. CO.
W. STONE	BLACK WATER BACKBOX M051-00H07-A006
3/22/88	
	SHEET 3 OF 3 REV A



THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG CO

DIM. TOLERANCES UNLESS OTHERWISE SPEC CONCENTRICITY T.I.R. .002 FRACTIONAL ± 1/64 DECIMAL ± .005 HOLE DIA + .002 − .000 ANGLE ± 1/2° DO NOT SCALE DWG.	DRN CL DATE 04/08/86	**MIDWAY MFG. CO.** FRANKLIN PK., IL 60131 A BALLY CO	REVISIONS
		ASSY DRAWING 6803 PINBALL PWR MODULE A084-91785-D000	PART NO M051-00C53-D001

6803 PINBALL POWER MODULE
A084-91785-D000
M051-00C53-D001

DESIGNATION LIST

DESIGNATION	DESCRIPTION
C1	11,000uf 20V ELEC.
P/O C1	TY-WRAP
P/O C1	SOLDER LUG
P/O C1	WIRE 20AWG
C2	160uf 350V ELEC.
P/O C2	TY-WRAP
C3	2uf 25V ELEC.
C4, C5	.1uf 25V CER.
C6, C7	.01uf 500V CER.
R1	600 OHM 10W
R2	100K 1W 5%
R3	2.2 OHM 1/4W 5%
R4	100 OHM 1/2W 5%
R5	22K 1/2W 5%
R6	100K 1/4W 5%
R7	390 OHM 1/4W 5%
R8	1.2K 1/4W 5%
R9	82K 1/2W 5%
R10	8.2K 1/4W 5%
VR1	0 - 25K 1/4W POT.
D1 - D4	MR751
D5 - D9	IN4004
D10	IN5275A ZENER
BR1	KBPC-35-02-W
P/O BR1	BRIDGE SPACER
Q1	2N3584
P/O Q1	SHIELD
P/O Q1	HEX SPACER
P/O Q1	6-32 X 5 SCREW
P/O Q1	6-32 X 12 SCREW
P/O Q1	LOCKWASHER EXT.
P/O Q1	LOCKWASHER INT.
P/O Q1	FLAT WASHER
P/O Q1	6-32 HEX NUT
P/O Q1	LABEL - CAUTION HIGH VOLT.
P/O Q1	HEATSINK 2
P/O Q1	INSULATOR TO-66
Q2, Q3	2N3440
P/O Q2, Q3	INSULATOR TO-5
P/O Q3	HEATSINK 3
U1	78H05C REG.
P/O U1	6-32 X 12 SCREW
P/O U1	6-32 HEX NUT
P/O U1	LOCKWASHER EXT.
P/O U1	FLAT WASHER
P/O U1	HEATSINK 1
P/O U1	INSULATOR TO-3
VA1	VARISTOR
JW1 - JW16	ZERO OHM RES. JUMPER
TP1 - TP10	TEST POINTS
F1*	5 AMP 3AG FUSE
F2	3/4 AMP 3AG FUSE
F3	6 AMP 3AG FUSE
F4, F5	8 AMP 3AG FUSE
F6, F7	15 AMP 3AG FUSE
F8	3/16 AMP 8AG FUSE
FC1A - FC3B, FC8A	FUSE CLIPS
FC8B	
FC4A - FC7B	FUSE CLIPS
J1	12 PIN M-N-L CONN. FEMALE
J2	6 PIN M-N-L CONN. MALE
J3	15 PIN M-N-L CONN. MALE
J4	9 PIN M-N-L CONN. MALE
J5	12 PIN M-N-L CONN. MALE
J6	2 PIN M-N-L CONN. MALE
6803 POWER MODULE	P.C. BOARD

4-23-86 REV. 1.0 FIXED R2, R6

* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC

6803 PINBALL POWER MODULE
A084-91785-D000
M051-00C53-D001

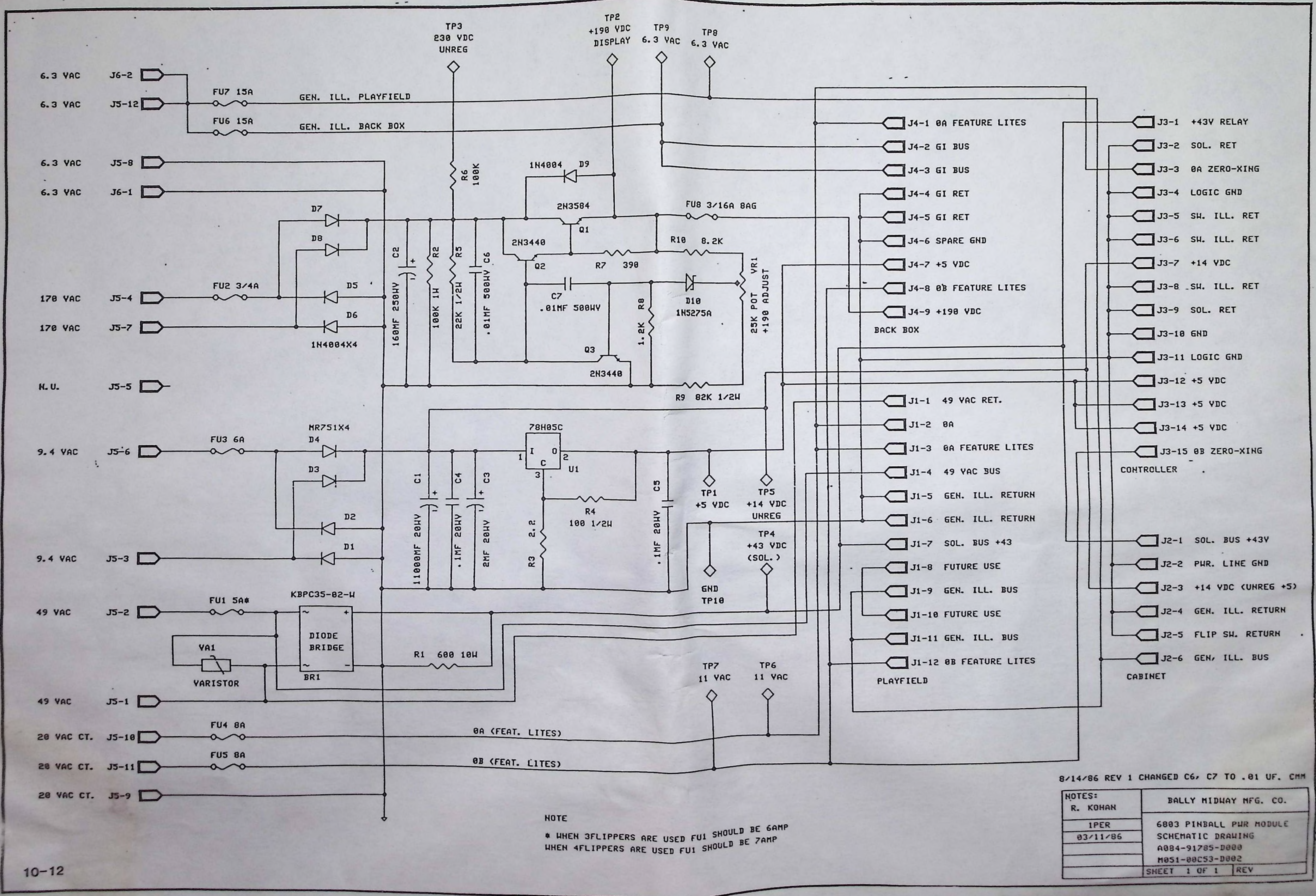
CROSS REFERENCE LIST

DESCRIPTION	OTY.	DESIGNATION NO.	PART NOS.
.01UF 500V CER.	2	C6,C7	0360-00800-0013
.1UF 25V CER.	2	C4,C5	0360-00800-0026
2UF 25V ELEC.	1	C3	0360-00800-0019
160UF 350V ELEC.	1	C2	0360-00800-0020
11,000UF 20V ELEC.	1	C1	0360-00800-0024
2.2 OHM 1/4W 5%	1	R3	100E-00005-0003
100 OHM 1/2W 5%	1	R4	100E-00006-0021
390 OHM 1/4W 5%	1	R7	100E-00005-0049
600 OHM 10W 10%	1	R1	100E-00002-0049
1.2K 1/4W 5%	1	R8	100E-00005-0063
8.2K 1/4W 5%	1	R10	100E-00005-0086
22K 1/2W 5%	1	R5	100E-00006-0065
82K 1/2W 5%	1	R9	100E-00006-0072
100K 1/4W 5%	1	R6	100E-00005-0115
100K 1W 5%	1	R2	100E-00007-0037
0-25K 1/4W POT	1	VR1	0360-00804-0004
MR 751	4	D1-D4	103E-00003-0016
1N4004	5	D5-D9	103E-00003-0005
1N5275	1	D10	103E-00001-0027
KBPC-35-02-W	1	BR1	103E-00005-0005
2N3440	2	02,03	104E-00003-0002
2N3584	1	01	104E-00005-0002
78H05C REG	1	U1	0360-00803-0021
VARISTOR METAL OXIDE 60V	1	VA1	115E-00001-0002
TY-WRAP	4	P/O C1,C2	0017-00042-0048
ZERO OHM RES. JUMPER	16	JW1-JW16	117E-00001-0001
TEST POINTS	10	TP1-TP10	0017-00007-0131
SOLDER LUG	2	P/O C1	0017-00021-0257
JUMPER WIRE 20AWG	2	P/O C1	0017-00033-0448
INSULATOR TO-3	1	P/O U1	0017-00042-0119
INSULATOR TO-5	2	P/O 02,03	0017-00042-0151
INSULATOR TO-66	1	P/O 01	0017-00042-0158
HEX SPACER	2	P/O 01	0017-00042-0248
SHIELD	1	P/O 01	0365-00952-0000
HEATSINK 1	1	P/O U1	112E-00001-0003
HEATSINK 2	1	P/O 01	112E-00001-0002
HEATSINK 3	1	P/O 03	112E-00001-0004
BRIDGE SPACER	1	P/O BR1	118E-00001-0001
6-32 X 12 SCREW	4	P/O 01,U1	0017-00101-0132
6-32 X 5 SCREW	2	P/O 01	0017-00101-0555
6-32 HEX NUT	4	P/O 01,U1	0017-00103-0005
LOCKWASHER INT.	4	P/O 01,	0017-00104-0008
LOCKWASHER EXT.	4	P/O 01,U1	0017-00104-0009
FLAT WASHER	4	P/O 01,U1	0017-00104-0106
FUSE CLIP	8	FC1A-FC3B, FC8A,FC8B	0017-00071-0033
FUSE CLIP	8	FC4A-FC7A	0017-00071-0034
3/16 AMP 8AG FUSE	1	F8	0017-00003-0206
3/4 AMP 3AG FUSE	1	F2	0017-00003-0010
5 AMP 3AG FUSE	1	F1*	0017-00003-0175
6 AMP 3AG FUSE	1	F3	0017-00003-0008

CROSS REFERENCE LIST

DESCRIPTION	OTY.	DESIGNATION NO.	PART NOS.
8 AMP 3AG FUSE	2	F4,F5	0017-00003-0387
15 AMP 3AG FUSE	2	F6,F7	0017-00003-0011
12 PIN M-N-L CONN. FEMALE	1	J1	0017-00021-0532
6 PIN M-N-L CONN. MALE	1	J2	0017-00021-0424
15 PIN M-N-L CONN. MALE	1	J3	0017-00021-0434
9 PIN M-N-L CONN. MALE	1	J4	0017-00021-0425
12 PIN M-N-L CONN. MALE	1	J5	0017-00021-0426
2 PIN M-N-L CONN. MALE	1	J6	0017-00021-0488
6803 POWER MODULE P.C.B.	1		A080-91785-D000

* TWO FLIPPER GAMES ONLY - SEE SCHEMATIC



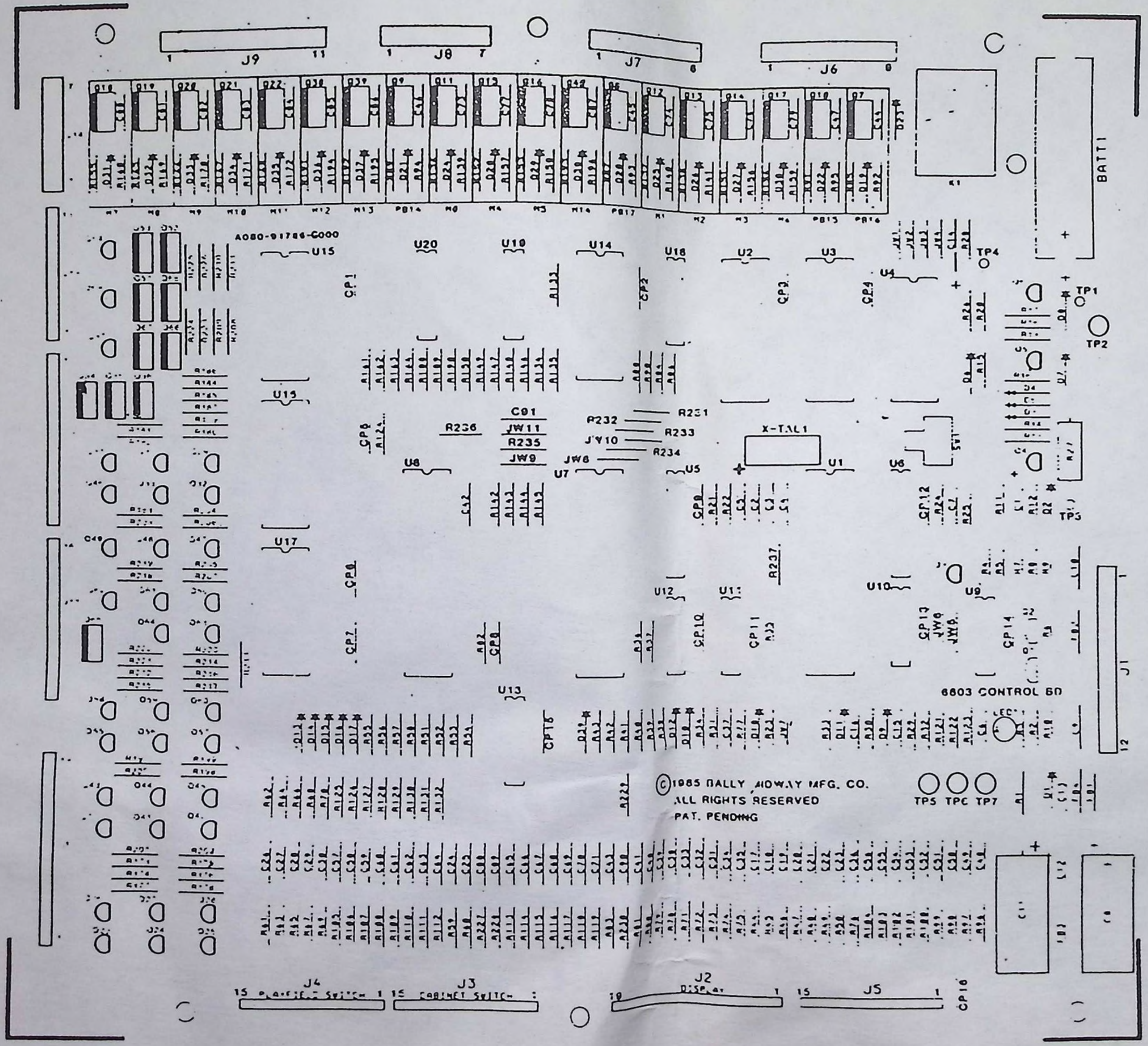
NOTE

* WHEN 3FLIPPERS ARE USED FU1 SHOULD BE 6AMP
WHEN 4FLIPPERS ARE USED FU1 SHOULD BE 7AMP

8/14/86 REV 1 CHANGED C6, C7 TO .01 UF. CMM

NOTES: R. KOHAN	BALLY MIDWAY MFG. CO.
IPER 03/11/86	6803 PINBALL PWR MODULE SCHEMATIC DRAWING A084-91785-D000 M051-00C53-D002
	SHEET 1 OF 1 | REV

09:32 /USER/DAN/POWER 1.DRAW



THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG CO

DIM. TOLERANCES
UNLESS OTHERWISE SPEC
CONCENTRICITY T I R . 002
FRACTIONAL ± 1/64
DECIMAL ± 005
HOLE DIA + 002 – 000
ANGLE ± 1/2°
DO NOT SCALE DWG

FIRST USED ON
DRN CL
DATE 04/08/86
SCALE
MECH CHK
MATL
ELEC CHK
FINISH

MIDWAY MFG. CO.
FRANKLIN PK., IL. 60131 A BALLY CO

ASSY DRAWING
6803 CONTROL BD.
A084-91786-G000

REVISIONS
PART NO
M0·5·1-0·0·C·5·3-G·0·0·3

6803 CONTROL BOARD
A084-91786-G000
M051-00C53-G003

DESIGNATION LIST

DESIGNATION	DESCRIPTION
C1	6.8UF 25V TANT.
C2,C3	27PF 50V CER.
C4	.1UF 50V CER.
C5	4.7UF 25V TANT.
C6	.01UF 50V CER.
C7	47PF 50V CER.
C8	470UF 16V ELEC.
C9,C10	.01UF 50V CER.
C11	470UF 25V ELEC.
C12,C13	.01UF 50V CER.
C14	4.7UF 25V TANT.
C15,C16	.01UF 50V CER.
C17 - C23	470PF 1KV CER.
C24 - C30	390PF 50V CER.
C31 - C36	470PF 1KV CER.
C37	.05UF 16V CER.
C38 - C41	470PF 1KV CER.
C42	.01UF 50V CER.
C43	.003UF 1KV CER.
C44 - C47	.002UF 1KV CER.
C48 - C56	470PF 1KV CER.
C57 - C71	390PF 50V CER.
C73 - C87	.002 1KV CER.
C88 - C90	390PF 50V CER.
C91	470PF 1KV CER.
CP1 - CP16	.01 50V CER.
R1	560 OHM 1/4W 5%
R2	2.7K 1/4W 5%
R3	1K 1/4W 5%
R4	9.1K 1/4W 5%
R5	7.5K 1/4W 5%
R6	2.7K 1/4W 5%
R7	39K 1/4W 5%
R8	100 OHM 1/4W 5%
R9	82 OHM 1/4W 5%
R10,R11	47K 1/4W 5%
R12,R13	10K 1/4W 5%
R14	82K 1/4W 5%
R15	62K 1/4W 5%
R16	5.6K 1/4W 5%
R17	3K 1/4W 5%
R18	910 OHM 1/4W 5%
R19	750 OHM 1/4W 5%
R20	1.5K 1/4W 5%
R21 - R23	3.3K 1/4W 5%
R24	120 OHM 1/4W 5%
R25	680 OHM 1/4W 5%
R26	100K 1/4W 5%
R27	82 OHM 1W 10%
R28	270 OHM 1/4W 5%
R29	1K 1/4W 5%
R30	10K 1/4W 5%
R31	15K 1/4W 5%
R32	1K 1/4W 5%
R33	10K 1/4W 5%
R34	15K 1/4W 5%
R35	3.3K 1/4W 5%
R36 - R43	4.7K 1/4W 5%
R44 - R50	1.2K 1/4W 5%
R51 - R58	3.3K 1/4W 5%
R59 - R61	1.2K 1/4W 5%
R62	56K 1/4W 5%
R63	1.2K 1/4W 5%
R64	56K 1/4W 5%
R65	1.2K 1/4W 5%
R66	56K 1/4W 5%
R67	1.2K 1/4W 5%
R68	56K 1/4W 5%
R69	1.2K 1/4W 5%
R70	56K 1/4W 5%
R71 - R76	1.2K 1/4W 5%
R77	270K 1/4W 5%
R78 - R82	1.2K 1/4W 5%
R83	110 OHM 1/4W 5%
R84	3.9K 1/4W 5%
R85	120 OHM 1/4W 5%
R86	3.9K 1/4W 5%
R87	120 OHM 1/4W 5%
R88	3.9K 1/4W 5%
R89	120 OHM 1/4W 5%
R90	3.9K 1/4W 5%
R91	120 OHM 1/4W 5%
R92 - R95	330 OHM 1/4W 5%
R96 - R104	470 OHM 1/4W 5%
R105 - R119	1.2K 1/4W 5%
R121	120 OHM 1/4W 5%
R122	1.2K 1/4W 5%
R123	2K 1/4W 5%
R124	3.3K 1/4W 5%
R125 - R132	56K 1/4W 5%
R133 - R135	1.2K 1/4W 5%
R136 - R138	120 OHM 1/4W 5%
R139 - R141	330 OHM 1/4W 5%
R142 - R145	3.3K 1/4W 5%
R146 - R150	1.2K 1/4W 5%
R151 - R155	120 OHM 1/4W 5%
R156 - R160	330 OHM 1/4W 5%
R161 - R164	1.2K OHM 1/4W 5%
R165 - R168	120 OHM 1/4W 5%
R169 - R172	330 OHM 1/4W 5%
R173 - R187	2K 1/4W 5%
R188 - R190	1.2K 1/4W 5%
R191 - R193	120 OHM 1/4W 5%
R194 - R196	330 OHM 1/4W 5%
R197 - R226	2K 1/4W 5%
R227,R228	1.2K 1/4W 5%
R229	56K 1/4W 5%
R230	1.2K 1/4W 5%
R231 - R234	330 OHM 1/4W 5%
R235	3.3K 1/4W 5%
R236	1.2K 1/4W 5%
R237	100K OHM 1/4W 5%
D1	1N958B
D2	1N4606
D3	1N4148
D4,D5	1N4606
D6	1N4148
D7,D8	1N4606
D9 - D18	1N4148
D19 - D38	1N4004
D39	1N4148
Q1	2N5305
Q2	2N3904
Q3	2N4403
Q4	2N3904
Q5	2N4403
Q6	2N3904
Q7 - Q22	SE9302
Q23 - Q33	2N5060
Q34 - Q36	MCR 106-1
Q37	2N5060
Q38 - Q40	SE9302
Q41 - Q50	2N5060
Q51 - Q53	MCR 106-1
Q54 - Q64	2N5060
Q65 - Q68	MCR 106-1
Q69,Q70	2N5060
U1	6803
U4	6116 RAM
U5	74HCT245
U6	74LS373
U7,U8	6821
U9	74LS10
U10	74LS04
U11	4011
U12	4584
U13	4502
U14	74LS154
U15 - U17	4514B
U18 - U20	CA3081
XTAL-1	3.580 MHZ CRYSTAL
LED 1	LED GREEN
TP1 - TP7	TEST POINTS
SW1	SWITCH P.B.
BATT-1	BATTERY 3.6V
JW2	ZERO OHM RES. JUMPER
JW4	ZERO OHM RES. JUMPER
JW6	ZERO OHM RES. JUMPER
JW8	ZERO OHM RES. JUMPER
JW10	ZERO OHM RES. JUMPER
K1	RELAY 48V DC
XU1,XU7,XU8	40 PIN IC SOCKET
XU2, XU3	28 PIN IC SOCKET
XU4	24 PIN IC SOCKET
FB1 - FB4	FERRITE BEAD
J1	11 - .045 SQ. PINS
J2	18 - .025 SQ. PINS
J3	14 - .025 SQ. PINS
J4	14 - .025 SQ. PINS
J5	14 - .025 SQ. PINS
J6	8 - .045 SQ. PINS
J7	7 - .045 SQ. PINS
J8	6 - .045 SQ. PINS
J9	10 - .045 SQ. PINS
J10	18 - .025 SQ. PINS
J11	17 - .025 SQ. PINS
J12	16 - .025 SQ. PINS
J13	12 - .025 SQ. PINS
J14	5 - .045 SQ. PINS
P/O BATT-1	TY-WRAP
6803 CONTROL BD.	P.C. BOARD

6803 CONTROL BOARD
A084-91786-G000
M051-00C53-G003

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
27pf 50V CER.	2	C2, C3	0360-00800-0052
47pf 50V CER.	1	C7	0360-00800-0027
390pf 50V CER.	25	C24-C30, C57-C71 C88-C90	0360-00800-0001
470pf 1KV CER.	27	C17-C23, C31-C36, C38-C41, C48-C56, C91	0307-00800-0008
.002uf 1KV CER.	19	C44-C47, C73-C87	0360-00800-0012
.003uf 1KV CER.	1	C43	0360-00800-0025
.01uf 50V CER.	24	C6, C9, C10, C12, C13 C15, C16, C42, CP1-CP16	0365-00800-0014
.05uf 16V CER.	1	C37	0360-00800-0006
.1uf 50V CER.	1	C4	0360-00800-0058
4.7uf 25V TANT	2	C5, C14	0360-00800-0008
6.8uf 25V TANT	1	C1	0360-00800-0048
470uf 16V ELEC	1	C8	0360-00800-0022
470uf 25V ELEC	1	C11	0360-00800-0024
82 OHM.1/4W 5%	1	R9	100E-00005-0031
100 OHM 1/4W 5%	1	R8	100E-00005-0033
110 OHM 1/4W 5%	1	R83	100E-00005-0034
120 OHM 1/4W 5%	21	R24, R85, R87, R89, R91, R121, R136-R138, R151-R155, R165-R168, R191-R193	100E-00005-0035
270 OHM 1/4W 5%	1	R28	100E-00005-0044
330 OHM 1/4W 5%	23	R92-R95, R139-R141, R156-R160, R169-R172, R194-R196, R231-R234	100E-00005-0047
470 OHM 1/4W 5%	9	R96-R104	100E-00005-0051
560 OHM 1/4W 5%	1	R1	100E-00005-0054
680 OHM 1/4W 5%	1	R25	100E-00005-0056
750 OHM 1/4W 5%	1	R19	100E-00005-0057
910 OHM 1/4W 5%	1	R18	100E-00005-0059
1K 1/4W 5%	3	R3, R29, R32	100E-00005-0061
1.2K 1/4W 5%	60	R44-R50, R59-R61, R63, R65, R67, R69, R71-R76 R78-R82, R105-R119, R122 R133-R135, R146-R150, R161-R164, R188-R190, R227, R228, R230, R236	100E-00005-0063
1.5K 1/4W 5%	1	R20	100E-00005-0065
2K 1/4W 5%	46	R123, R173-R187 R197-R226	100E-00005-0068
2.7K 1/4W 5%	2	R2, R6	100E-00005-0071
3K 1/4W 5%	1	R17	100E-00005-0073
3.3K 1/4W 5%	18	R21-R23, P35, R51-R58, R124, R142-R145, R235	100E-00005-0074
3.9K 1/4W 5%	4	R84, R86, R88, R90	100E-00005-0077
4.7K 1/4W 5%	8	R36-R43	100E-00005-0079
5.6 1/4W 5%	1	R16	100E-00005-0082

CROSS REFERENCE LIST

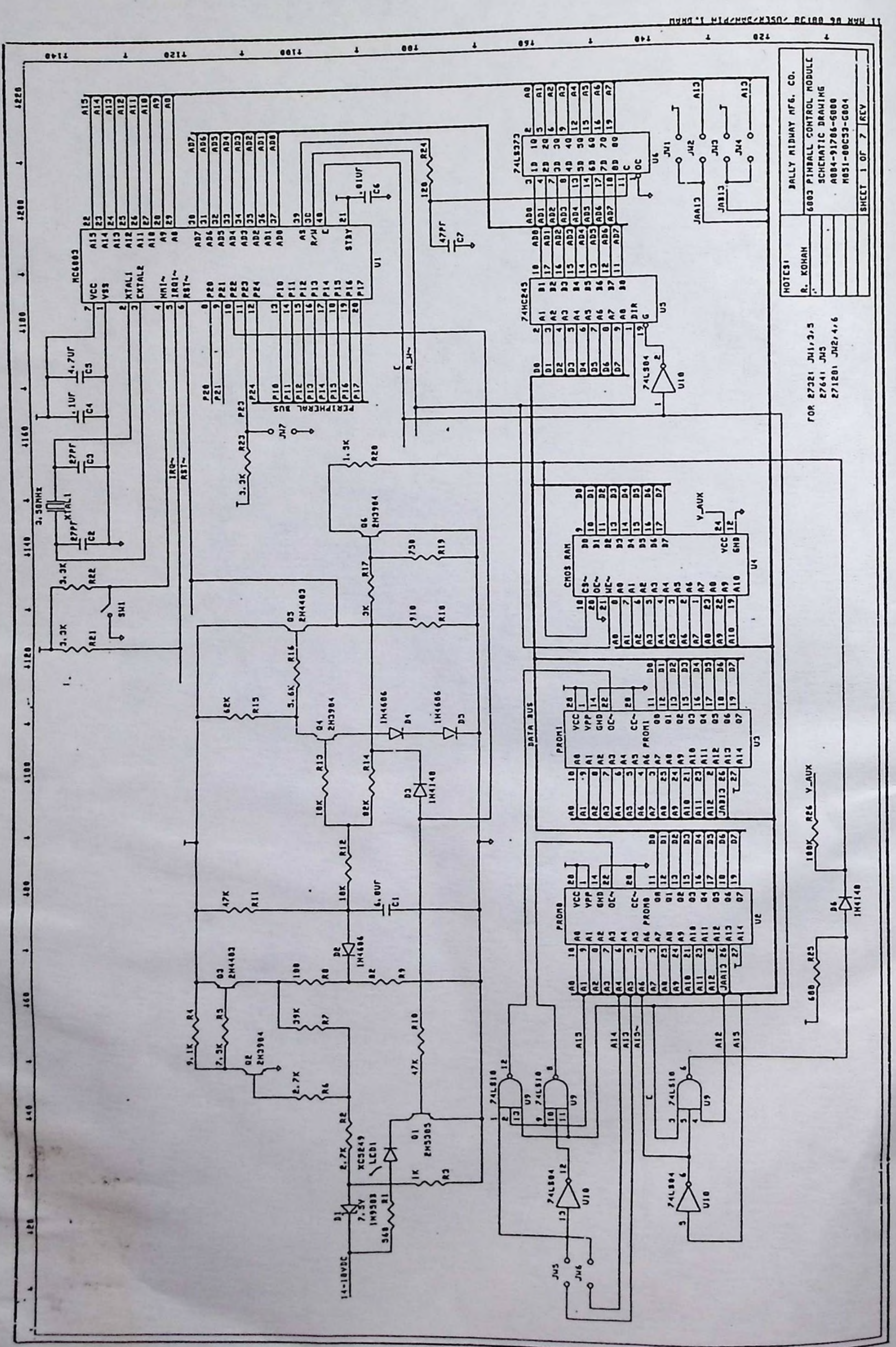
DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
7.5 1/4W 5%	1	R5	100E-00005-0085
9.1 1/4W 5%	1	R4	100E-00005-0087
10K 1/4W 5%	4	R12, R13, R30, R33	100E-00005-0088
15K 1/4W 5%	2	R31, R34	100E-00005-0092
39K 1/4W 5%	1	R7	100E-00005-0102
47K 1/4W 5%	2	R10, R11	100E-00005-0104
56K 1/4W 5%	14	R62, R64, R66, R68 R70, R125-R132, R229	100E-00005-0106
62K 1/4W 5%	1	R15	100E-00005-0107
82K 1/4W 5%	1	R14	100E-00005-0112
100K 1/4W 5%	2	R26, R237	100E-00005-0115
270K 1/4W 5%	1	R77	100E-00005-0126
82 OHM 1W 10%	1	R27	100E-00007-0014
1N958B ZENER	1	D1	103E-00001-0002
1N4004	20	D19-D38	103E-00003-0005
1N4148	13	D3, D6, D9-D18, D39	103E-00002-0005
1N4606	5	D2, D4, D5, D7, D8	103E-00002-0006
2N3904	3	02, 04, 06	104E-00001-0006
2N4403	2	03, 05	104E-00002-0006
2N5060	35	023-033, 037, 041-050, 054-064, 069, 070	104E-00015-0001
2N5305	1	01	104E-00007-0003
MCR106-1	10	034-036, 051-053 065-068	0360-00802-0009
SE9302	19	07-022, 038-040	0360-00802-0008
4011	1	U11	0360-00803-0010
4502	1	U13	0360-00803-0005
4514B	3	U15-U17	0360-00803-0013
4584	1	U12	0066-090BX-XXDX
6116 RAM	1	U4	0365-00803-0013
6803 MPU	1	U1	0360-00803-0048
6821 PIA	2	U7, U8	0360-00803-0017
74LS04	1	U10	0A15-00803-0010
74LS10	1	U9	0A89-00803-0007
75LS154	1	U14	0360-00803-0024
74HCT245	1	U5	0365-00803-0014
74LS373	1	U6	0A89-00803-0006
CA3081	3	U18-U20	0360-00803-0007
3.580 MHz CRYSTAL	1	XTAL-1	109E-00001-0003
LED GREEN	1	LED 1	0017-00007-0131
TEST POINTS	7	TP1-TP7	0017-00007-0131
SWITCH P.B.	1	SW1	0017-00032-0038
BATTERY 3.6V	1	BATT-1	0017-00003-0172
ZERO OHM RES. JUMPER	5	JW2, JW4, JW6, JW8, JW10	117E-00001-0001
RELAY 48VDC	1	K1	114F-00001-0011
40 PIN I.C. SOCKET	3	XU1, XU7, XU8	110E-00001-0011
28 PIN I.C. SOCKET	2	XU2, XU3	110E-00001-0010
24 PIN I.C. SOCKET	1	XU4	110E-00001-0007
FERRITE BEAD	4	FB1-FB4	0316-00804-0002

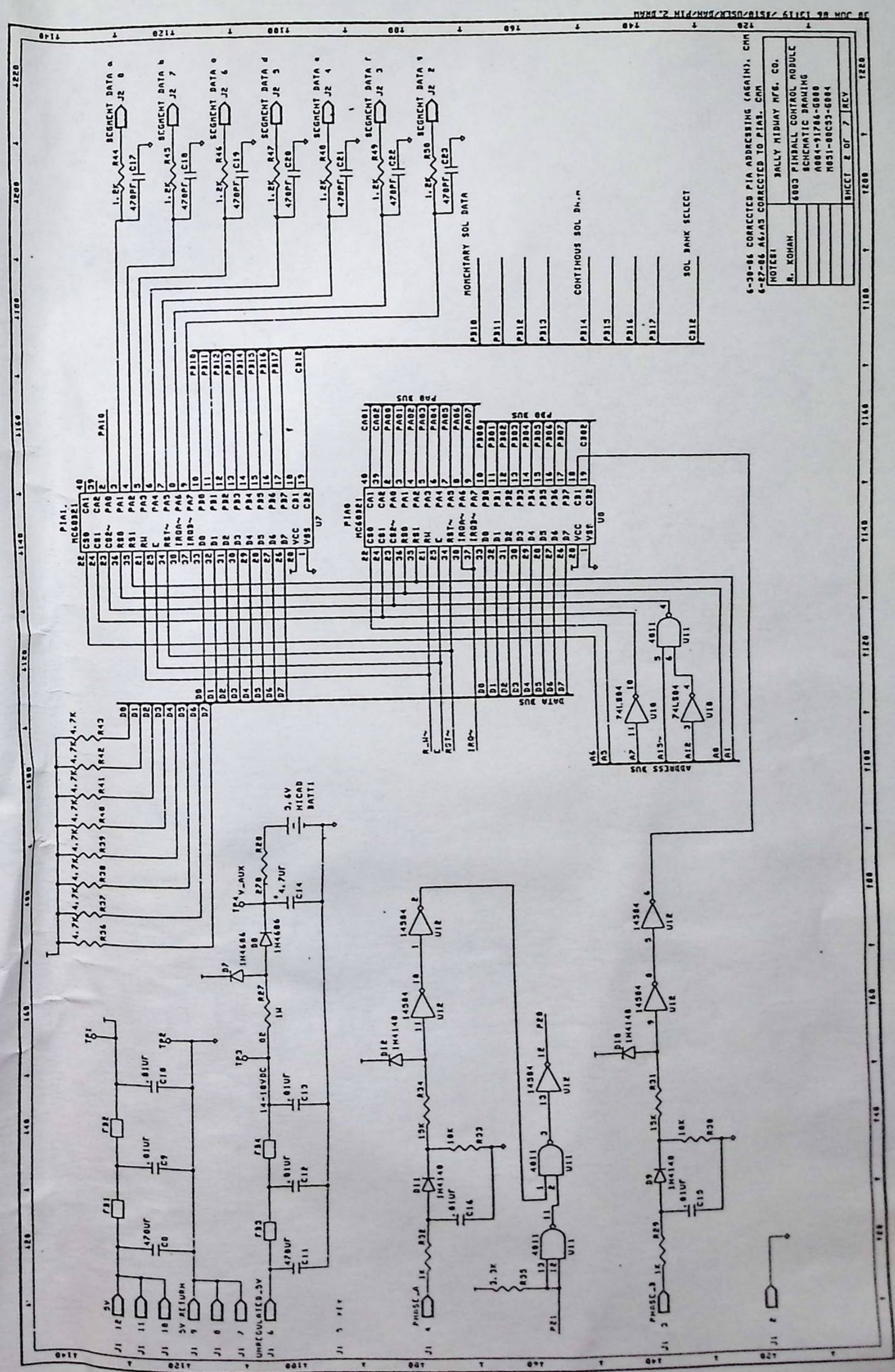
6803 CONTROL BOARD
A084-91786-G000
M051-000C53-G003

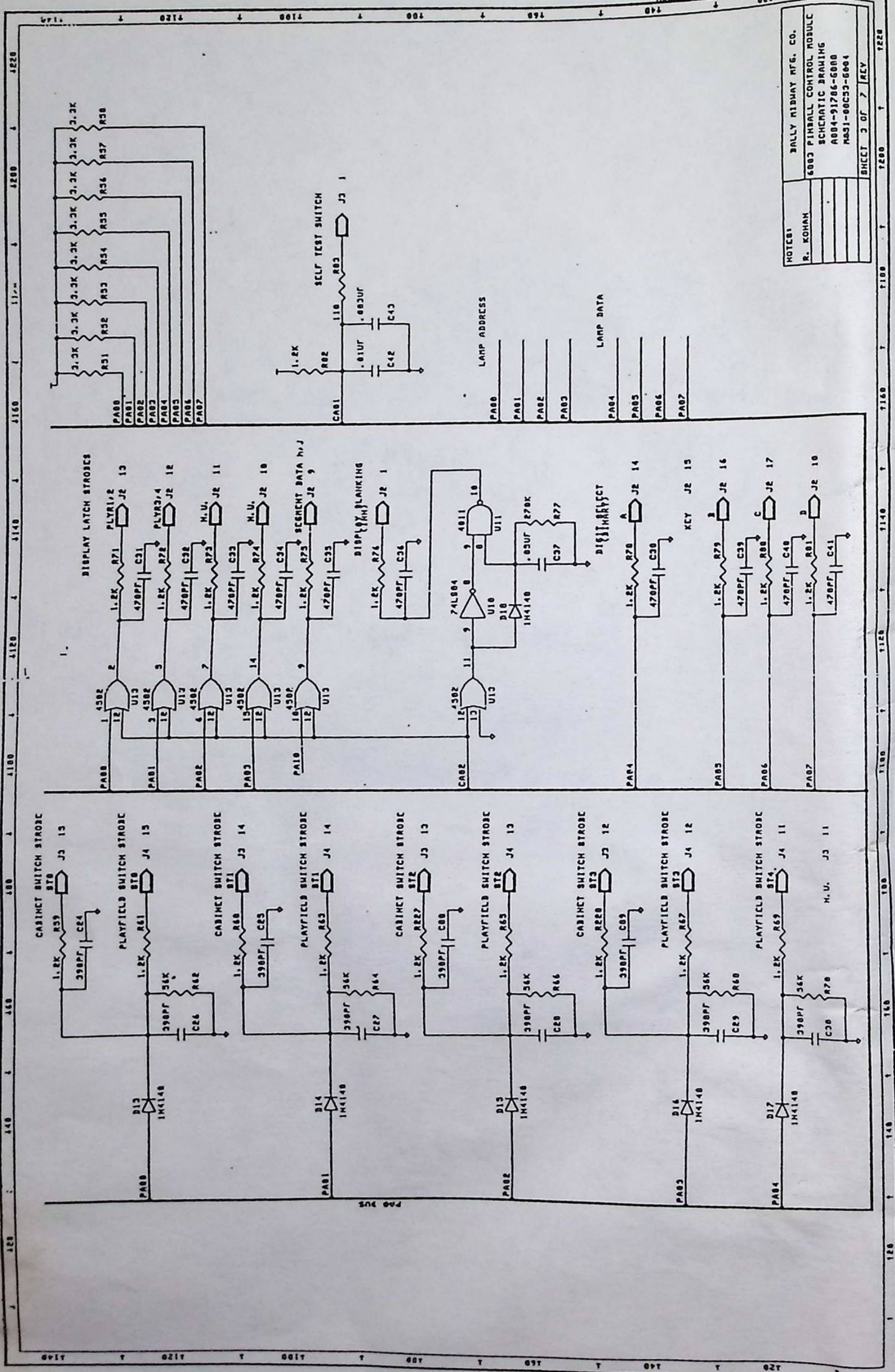
CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
.025 SQ. PINS	123	J2, J3, J4, J5, J10, J11, J12, J13	0304-00804-0009
.045 SQ. PINS	47	J1, J6, J7, J8, J9, J14	0304-00804-0010
TY-WRAP	1	P/O BATT-1	0017-00042-0622
P.C. BOARD	1	6803 CONTROL BOARD	A080-91786-G000

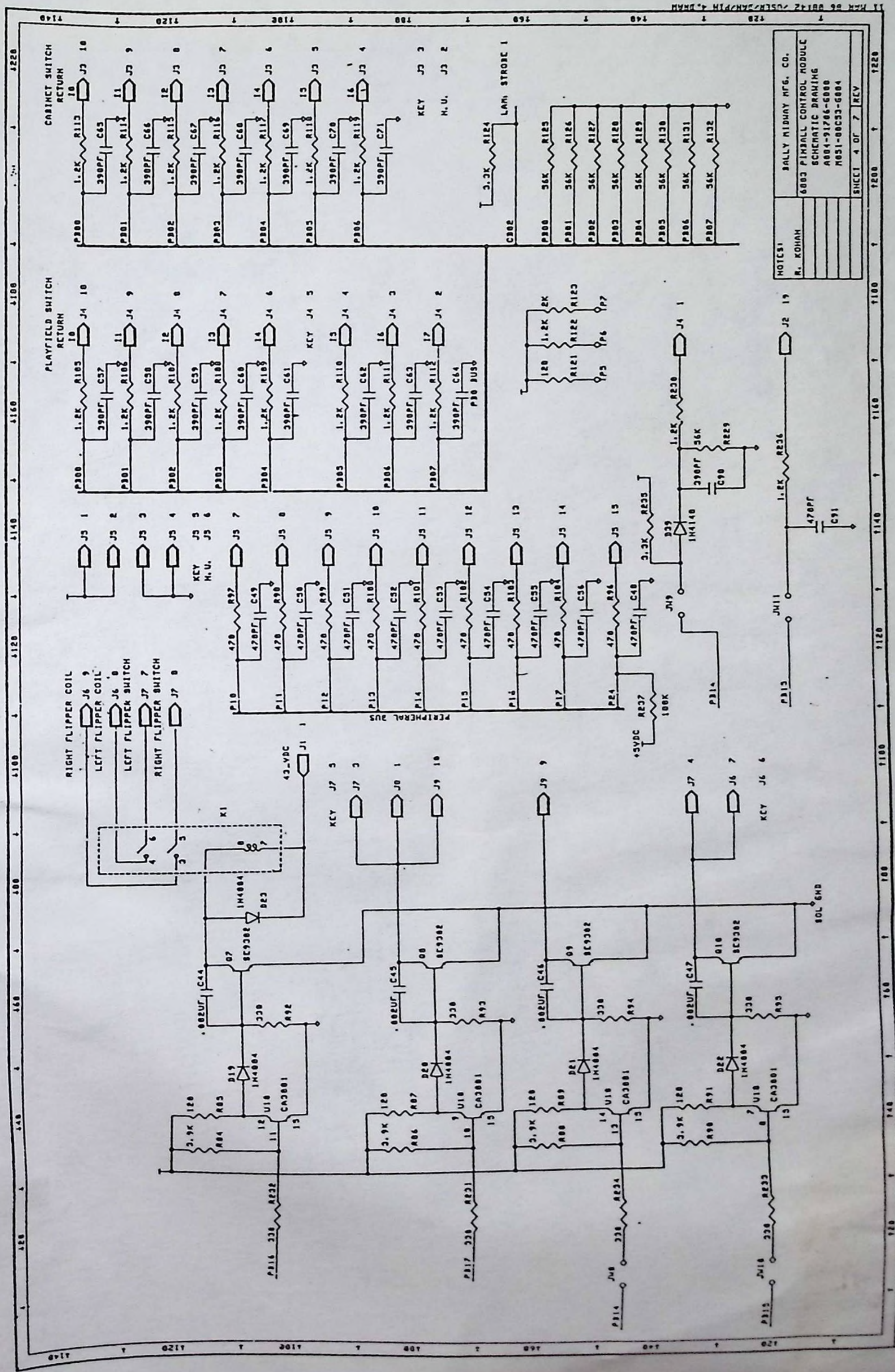
4-23-86 REV. 1.0 Fixed Part Number for 470PF Cap.


BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 1 OF 7
REV
NOTES:
R. KOHAN
FOR 2732: JU1,3,5
27C41: JU3
27128: JU2,4,6
MC6803
U1
74LS373
74HC245
CMOS RAM
PROM1
PROM0
PERIPHERAL BUS
DATA BUS
3.58MHZ
14-18VDC
V_AUX

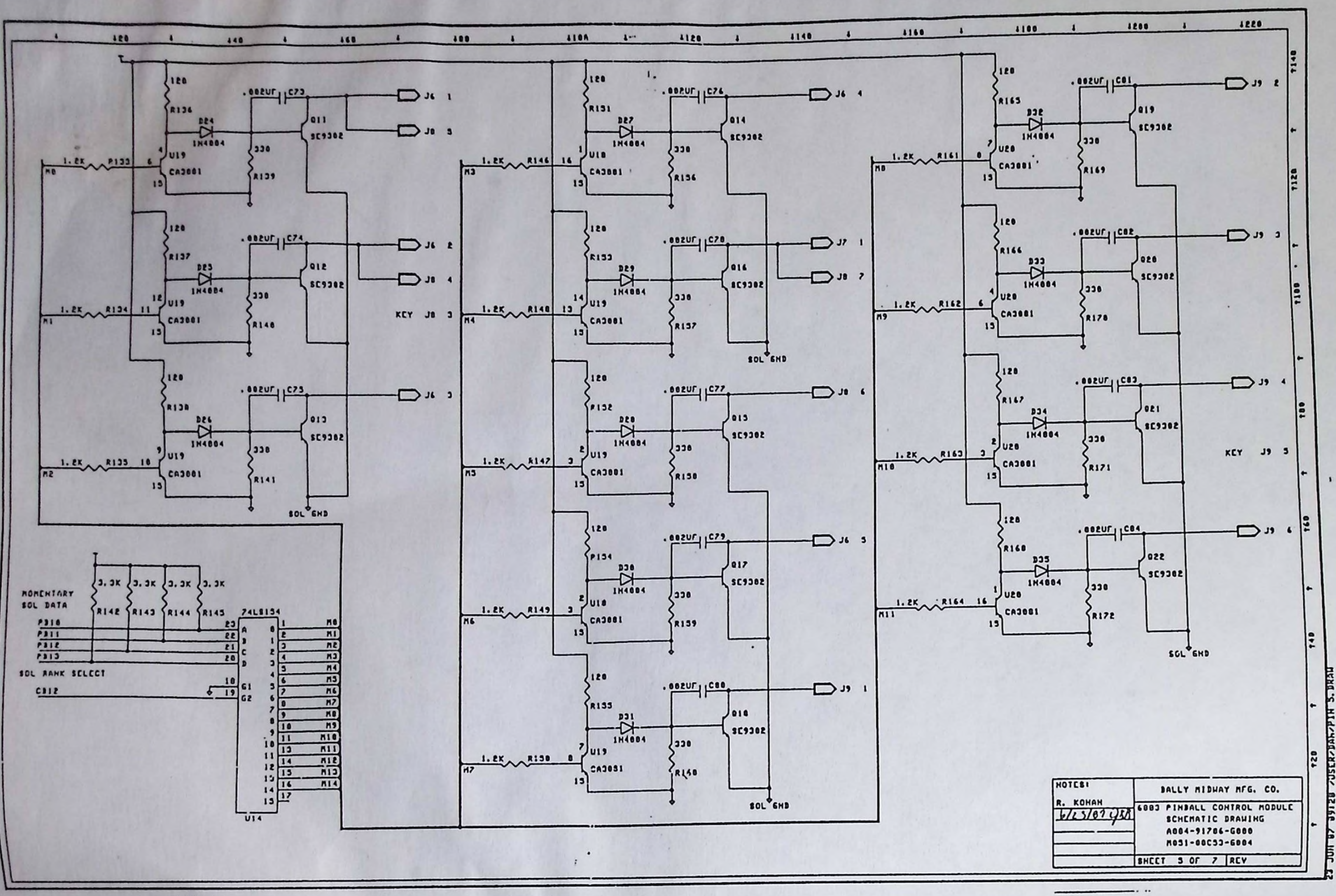

BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 2 OF 7
REV
NOTES:
R. KOHAN
6-30-86 CORRECTED PIA ADDRESSING (AGAIN). CMR
6-27-86 A6/A5 CORRECTED TO PIAS. CMR
SEGMENT DATA a
SEGMENT DATA b
SEGMENT DATA c
SEGMENT DATA d
SEGMENT DATA e
SEGMENT DATA f
SEGMENT DATA g
MOMENTARY SOL DATA
CONTINUOUS SOL DATA
SOL BANK SELECT
PIA1 MC68B21
PIA0 MC68B21
PA0 BUS
PB0 BUS
DATA BUS
ADDRESS BUS
PHASE_A
PHASE_B
UNREGULATED 5V
5V RETURN
3.6V NICAD BATT1

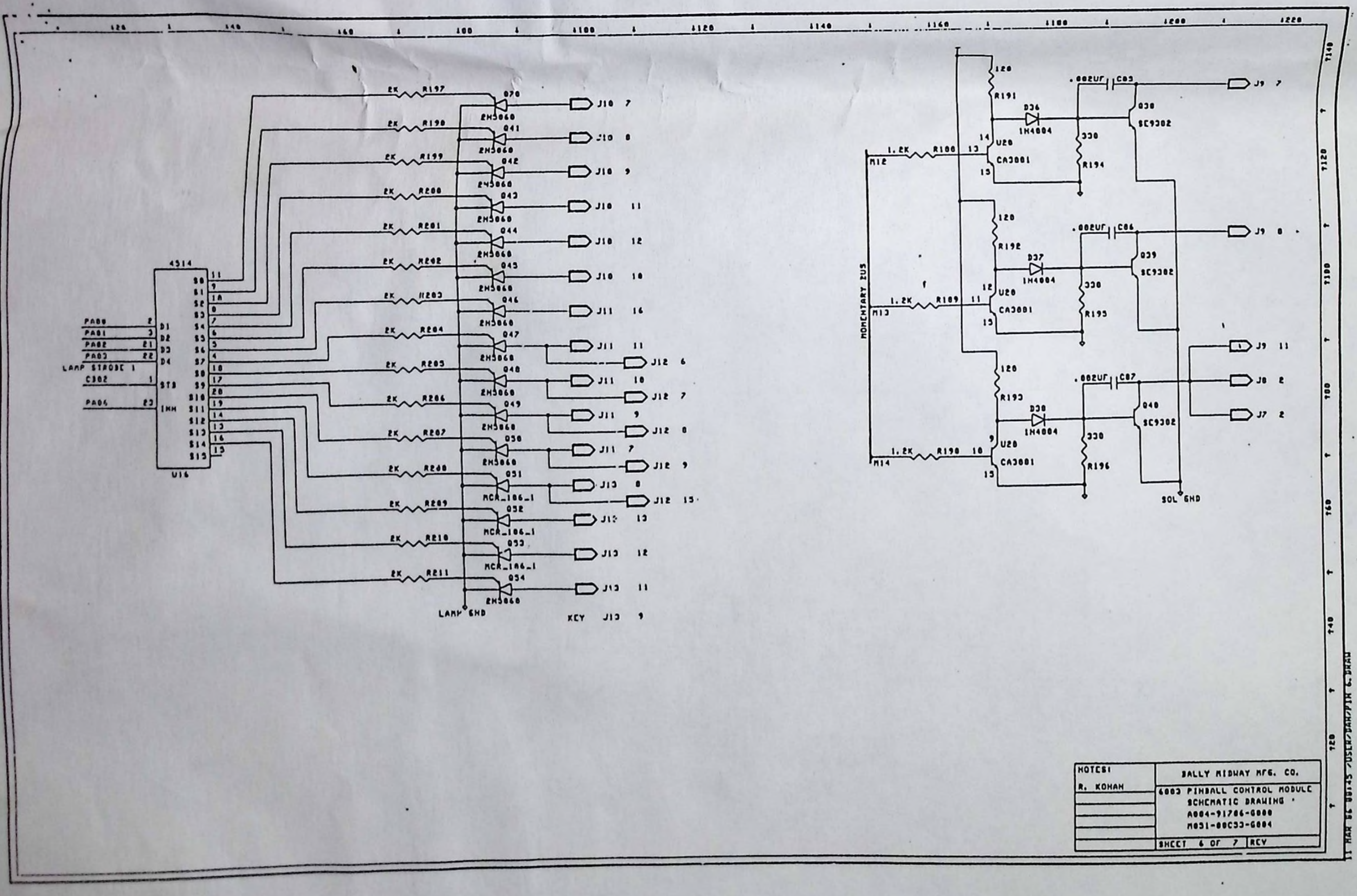


NOTES:
R. KOHAN
BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 3 OF 7
REV
DISPLAY LATCH STROBES
PLYR1,2
PLYR3,4
N.U.
SEGMENT DATA H,J
DISPLAY BLANKING
DIGIT SELECT STROBES
KEY
SELF TEST SWITCH
LAMP ADDRESS
LAMP DATA
CABINET SWITCH STROBE
PLAYFIELD SWITCH STROBE
PA0 BUS
4502
74LS04
4011
1N4148



NOTES:
R. KOHAN
BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 4 OF 7
REV
CABINET SWITCH RETURN
PLAYFIELD SWITCH RETURN
LAMP STROBE 1
PERIPHERAL BUS
RIGHT FLIPPER COIL
LEFT FLIPPER COIL
LEFT FLIPPER SWITCH
RIGHT FLIPPER SWITCH
+5 VDC
K1
SOL GND
BC9302
1N4004
CA3081
KEY
N.U.


NOTES:
R. KOHAN
6/23/87
BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 5 OF 7
REV
23 JUN 87 09:20 /USER/DAN/PIN 5.DRAW
MOMENTARY SOL DATA
PB10
PB11
PB12
PB13
SOL BANK SELECT
CB12
74LS154
U14
3.3K
R142
R143
R144
R145
M0
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
M14
1.2K
120
330
.002uF
1N4004
CA3081
SC9302
U18
U19
U20
SOL GND
KEY J8 3
KEY J9 5
J6 1
J8 5
J6 2
J8 4
J6 3
J6 4
J7 1
J8 7
J8 6
J6 5
J9 1
J9 2
J9 3
J9 4
J9 6


NOTES:
R. KOHAN
BALLY MIDWAY MFG. CO.
6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91786-G000
M051-00C53-G004
SHEET 6 OF 7
REV
11 MAR 86 08:45 /USER/DAN/PIN 6.DRAW
4514
U16
PA00
PA01
PA02
PA03
LAMP STROBE 1
CB02
PA04
STB
INH
2K
2N5060
MCR_106_1
LAMP GND
KEY J13 9
MOMENTARY 2U5
M12
M13
M14
1.2K
120
330
.002uF
1N4004
CA3081
SC9302
U20
SOL GND
J9 7
J9 8
J9 11
J8 2
J7 2
J10 7
J10 8
J10 9
J10 11
J10 12
J10 10
J11 16
J11 11
J12 6
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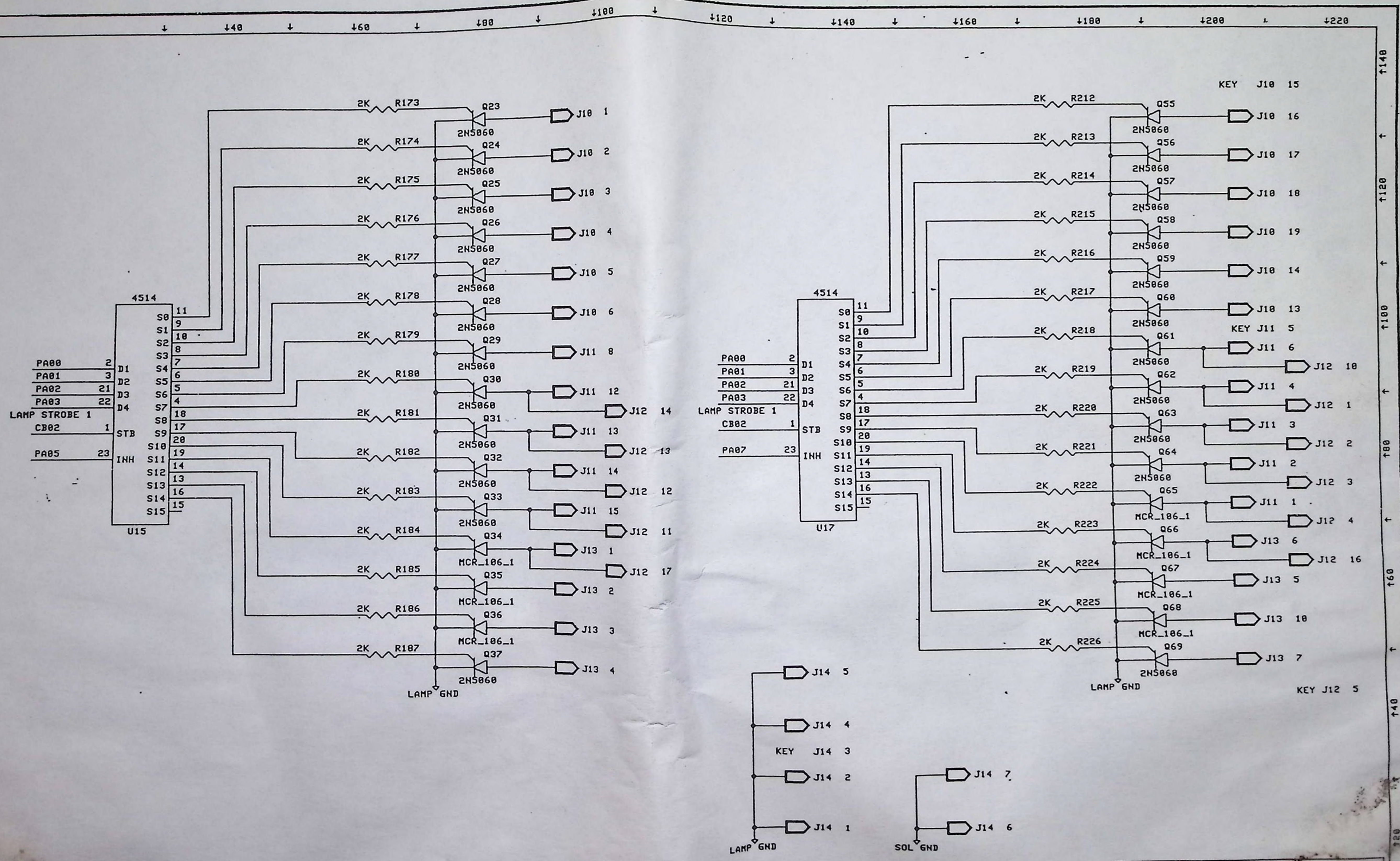
J12 15
J13 13
J13 12
J13 11



NOTES:

R. KOHAN

BALLY MIDWAY MFG. CO.

6803 PINBALL CONTROL MODULE
SCHEMATIC DRAWING
A084-91706-G000
M051-00C53-G004

SHEET 7 OF 7 REV

11 MAR 86 08146 /USER/DAN/PIN 7.DRAW

LAMP & COIL/SOLENOID DRIVER LOCATIONS LISTING

LAMP DRIVER NUMBER SEQUENCE

DRIVER[1]	CONNECTOR	PIN	WIRE	PHASE	DESCRIPTION
Q23	J10	1	12	A	COLD
Q23	J10	1	12	B	SPECIAL TEST
Q24	J10	2	13	A	RAPIDS
Q24	J10	2	13	B	RIGHT SAUCER 2
Q25	J10	3	14	A	MOON
Q25	J10	3	14	B	DOWNHILL 6
Q26	J10	4	15	A	SUCKIN
Q26	J10	4	15	B	RETURN LANE LEFT
Q27	J10	5	18	A	NEVER
Q27	J10	5	18	B	START RED
Q28	J10	6	21	A	BOGS
Q28	J10	6	21	B	SPSA (SHOOT AGAIN)
Q29	J11	8	64	A	BONUS 2X
Q29	J11	8	64	B	RAIN A
Q30	J11	12	72	A	DOWNHILL 2
Q30	J11	12	72	B	TUNNEL RIGHT 3
Q31	J11	13	73	A	LAP 3
Q31	J11	13	73	B	CLIFF SECTION
Q32	J11	14	74	A	CLIFF-HANGER
Q32	J11	14	74	B	HILL CLIMB SECTION
Q33	J11	15	75	A	TUNNEL LEFT 2
Q33	J11	15	75	B	SWAMP SECTION BRITE
Q34	J13	1	81	C	BACKBOX LEFT BRITE
Q34	J13	1	81	D	SWAMP BRITE LEFT
Q35	J13	2	83	C	BACKBOX RIGHT BRITE
Q35	J13	2	83	D	SLINGSHOT RIGHT BRITE
Q36	J13	3	84	C	DOWNHILL BRITE
Q36	J13	3	84	C	HILL CLIMB BRITE
Q37	J13	4	85	A	CLIFF 3
Q37	J13	4	85	B	RAIN 4X
Q41	J10	8	25	A	HIGHWAY 93 JUMP
Q41	J10	8	25	B	RIGHT SAUCER 1
Q42	J10	19	26	A	MEAN
Q42	J10	19	26	B	DOWNHILL 5
Q43	J10	11	31	A	BIKE
Q43	J10	11	31	B	OUTLANE RIGHT
Q44	J10	12	32	A	BIG
Q44	J10	12	32	B	START YELLOW
Q45	J10	10	28	A	BONUS 4X
Q45	J10	10	28	B	RAIN N
Q46	J11	16	78	A	DOWNHILL 4
Q46	J11	16	78	B	RAIN R
Q47	J11	11	71	A	DOWNHILL 1
Q47	J11	11	71	B	TUNNEL RIGHT 2
Q48	J11	10	68	A	LAP 2
Q48	J11	10	68	B	DOWNHILL SECTION
Q49	J11	9	67	A	TUNNEL LEFT 4
Q49	J11	9	67	B	RAPIDS SECTION
Q50	J11	7	63	A	TUNNEL LEFT 1
Q50	J11	7	63	B	ROCKS SECTION
Q51	J13	8	93	C	RAPIDS BRITE
Q51	J13	8	93	D	RIGHT SAUCER BRITE
Q52	J13	3	97	C	FAST LINE BRITE
Q52	J13	3	97	D	SLINGSHOT LEFT BRITE
Q53	J13	12	96	A	TOP SAUCER RIGHT
Q53	J13	12	96	B	RIGHT TOP LOOP
Q54	J13	11	95	A	CLIFF 2
Q54	J13	11	95	B	RAIN 3X
Q55	J10	16	38	A	ROCKY
Q55	J10	16	38	B	TOP SAUCER 1
Q56	J10	17	41	A	ROCKS
Q56	J10	17	41	B	DOWNHILL 7
Q57	J10	18	43	A	SWAMP
Q57	J10	18	43	B	RETURN LANE RIGHT
Q58	J10	19	45	A	ENDING
Q58	J10	19	45	B	OUTLANE LEFT
Q59	J10	14	37	A	BAD
Q59	J10	14	37	B	START GREEN
Q60	J10	13	36	A	BONUS 3X
Q60	J10	13	36	B	RAIN I
Q61	J11	6	62	A	DOWNHILL 3
Q61	J11	6	62	B	TUNNEL RIGHT 4
Q62	J11	4	61	A	HILL CLIMB
Q62	J11	4	61	B	TUNNEL RIGHT 1
Q63	J11	3	59	A	LAP 1
Q63	J11	3	59	B	BOGS SECTION
Q64	J11	2	58	A	TUNNEL LEFT 3
Q64	J11	2	58	B	HIGHWAY 93 SECTION
Q65	J11	1	48	C	HIGHWAY 93 BRITE
Q65	J11	1	48	D	SWAMP BRITE RIGHT
Q66	J13	6	87	C	SHOOTER BRITE
Q66	J13	6	87	D	BOGS BRITE
Q67	J13	5	86	C	BOTTOM FLIPPER BRITE
Q67	J13	5	86	D	ROCK BRITE
Q68	J13	10	94	A	TOP SAUCER LEFT
Q68	J13	10	94	B	LEFT TOP LOOP
Q69	J13	7	91	A	CLIFF 1
Q69	J13	7	91	B	RAIN 2X
Q70	J10	7	24	A	WET
Q70	J10	7	24	B	TOP SAUCER 2

COIL/SOLENOID DRIVER NUMBER SEQUENCE

DRIVER[1]	CONNECTOR	PIN	WIRE	DESCRIPTION
Q7	J1	1	30	FLIPPER CONTROL RELAY K1[2]
Q10	J6	7	311	GENERAL ILLUMINATION CONTROL
Q11	J6	1	31	SAUCER RIGHT
Q12	J6	2	32	SAUCER TOP
Q13	J6	3	34	GATE DOWN
Q14	J6	4	35	GATE RAISE
Q15	J8	7	27	LEFT SLINGSHOT
Q16	J8	6	25	RIGHT SLINGSHOT
Q18	J9	1	51	DROP TARGET RESET
Q22	J9	6	56	EJECT TO SHOOTER
Q38	J9	7	57	RESERVED FOR GERMAN USE
Q39	J9	8	58	OUTHOLE
Q40	J9	11	59	KNOCKER

[1] DRIVERS NOT LISTED ARE NOT USED.

[2] THE FLIPPER SWITCHES ARE WIRED IN SERIES WITH THE K1 RELAY SWITCH. WHEN THE RELAY IS ENERGIZED AND EITHER FLIPPER PUSH BUTTON IS PRESSED, THE FLIPPER SOLENOIDS ENERGIZE.

WIRE COLOR CODE

1-RED	6-BROWN
2-BLUE	7-ORANGE
3-YELLOW	8-BLACK
4-GREEN	9-GREY
5-WHITE	0-NO TRACE

1ST NUMBER IN CODE = BODY COLOR
2ND NUMBER IN CODE = TRACER COLOR

EXAMPLE: 80 = BLACK
85 = BLACK/WHITE

LAMP DESCRIPTION NAME SEQUENCE

DESCRIPTION	DRIVER^1	CONNECTOR	PIN	WIRE	PHASE
BACKBOX LEFT BRITE	Q34	J13	1	81	C
BACKBOX RIGHT BRITE	Q35	J13	2	83	C
BAD	Q59	J10	14	37	A
BIG	Q44	J10	12	32	A
BIKE	Q43	J10	11	31	A
BOGS	Q28	J10	6	21	A
BOGS BRITE	Q66	J13	6	87	D
BOGS SECTION	Q63	J11	3	59	B
BONUS 2X	Q29	J11	6	64	A
BONUS 3X	Q60	J10	13	36	A
BONUS 4X	Q45	J10	10	28	A
BOTTOM FLIPPER BRITE	Q67	J13	5	86	C
CLIFF-HANGER	Q32	J11	14	74	A
CLIFF SECTION	Q31	J11	13	73	B
CLIFF 1	Q69	J13	7	91	A
CLIFF 2	Q54	J13	11	95	A
CLIFF 3	Q37	J13	4	85	A
COLD	Q23	J10	1	12	A
DOWNHILL BRITE	Q36	J13	3	84	C
DOWNHILL SECTION	Q48	J11	10	68	B
DOWNHILL 1	Q47	J11	11	71	A
DOWNHILL 2	Q30	J11	12	72	A
DOWNHILL 3	Q61	J11	6	62	A
DOWNHILL 4	Q46	J11	16	78	A
DOWNHILL 5	Q42	J10	9	26	B
DOWNHILL 6	Q25	J10	3	14	B
DOWNHILL 7	Q56	J10	17	41	B
ENDING	Q58	J10	19	45	A
FAST LINE BRITE	Q52	J13	3	97	C
HIGHWAY 93 BRITE	Q65	J11	1	48	C
HIGHWAY 93 JUMP	Q41	J10	8	25	A
HIGHWAY 93 SECTION	Q64	J11	2	58	B
LAP 1	Q63	J11	3	59	A
LAP 2	Q48	J11	10	68	A
LAP 3	Q31	J11	13	73	A
LEFT TOP LOOP	Q68	J13	10	94	B
MEAN	Q42	J10	19	26	A
MOON	Q25	J10	3	14	A
NEVER	Q27	J10	5	18	A
OUTLANE LEFT	Q58	J10	19	45	B
OUTLANE RIGHT	Q43	J10	11	31	B
RAIN A	Q29	J11	8	64	B
RAIN I	Q60	J10	13	36	B
RAIN N	Q45	J10	10	28	B
RAIN R	Q46	J11	16	78	B
RAIN 2X	Q69	J13	7	91	B
RAIN 3X	Q54	J13	11	95	B
RAIN 4X	Q37	J13	4	85	B
RAPIDS	Q24	J10	2	13	A
RAPIDS BRITE	Q51	J13	8	93	C
RAPIDS SECTION	Q49	J11	9	67	B
RETURN LANE LEFT	Q26	J10	4	15	B
RETURN LANE RIGHT	Q57	J10	18	43	B
RIGHT SAUCER 1	Q41	J10	8	25	B
RIGHT SAUCER 2	Q24	J10	2	13	B
RIGHT SAUCER BRITE	Q51	J13	8	93	D
RIGHT TOP LOOP	Q53	J13	12	96	B
ROCKS	Q56	J10	17	41	A
ROCK BRITE	Q67	J13	5	86	D
ROCKS SECTION	Q50	J11	7	63	B
ROCKY	Q55	J10	16	38	A
SHOOT AGAIN (SPSA)	Q28	J10	6	21	B
SLINGSHOT LEFT BRITE	Q52	J13	3	97	D
SLINGSHOT RIGHT BRITE	Q35	J13	2	83	D
SHOOTER BRITE	Q66	J13	6	87	C
SPECIAL TEST	Q23	J10	1	12	B
START RED	Q27	J10	5	18	B
START GREEN	Q59	J10	14	37	B
START YELLOW	Q44	J10	12	32	B
SUCKIN	Q26	J10	4	15	A
SWAMP	Q57	J10	18	43	A
SWAMP BRITE LEFT	Q34	J13	1	81	D
SWAMP BRITE RIGHT	Q65	J11	1	48	D
SWAMP SECTION	Q33	J11	13	75	B
TOP SAUCER LEFT	Q68	J13	10	94	A
TOP SAUCER RIGHT	Q53	J13	12	96	A
TOP SAUCER 1	Q55	J10	16	38	B
TOP SAUCER 2	Q70	J10	7	24	B
TUNNEL LEFT 1	Q50	J11	7	63	A
TUNNEL LEFT 2	Q33	J11	13	75	A
TUNNEL LEFT 3	Q64	J11	2	58	A
TUNNEL LEFT 4	Q49	J11	9	67	A
TUNNEL RIGHT 1	Q62	J11	4	61	B
TUNNEL RIGHT 2	Q47	J11	11	71	B
TUNNEL RIGHT 3	Q30	J11	12	72	B
TUNNEL RIGHT 4	Q61	J11	6	62	B
HILL CLIMB	Q62	J11	4	61	A
HILL CLIMB BRITE	Q36	J13	3	84	C
HILL CLIMB SECTION	Q32	J11	14	74	B
WET	Q70	J10	7	24	A

COIL/SOLENOID DESCRIPTION NAME SEQUENCE

DESCRIPTION	DRIVER^1	CONNECTOR	PIN	WIRE
DROP TARGET RESET	Q18	J9	1	51
EJECT TO SHOOTER	Q22	J9	6	56
FLIPPER CONTROL RELAY K1[2]	Q7	J1	1	30
GATE DOWN	Q13	J6	3	34
GATE RAISE	Q14	J6	4	35
GENERAL ILLUMINATION CONTROL	Q10	J6	7	311
KNOCKER	Q40	J9	11	59
OUTHOLE	Q39	J9	8	58
RESERVED FOR GERMAN USE	Q38	J9	7	57
SAUCER RIGHT	Q11	J6	1	31
SAUCER TOP	Q12	J6	2	32
SLINGSHOT LEFT	Q15	J8	7	27
SLINGSHOT RIGHT	Q16	J8	6	25

[1] DRIVERS NOT LISTED ARE NOT USED.

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1ST NUMBER IN CODE = BODY COLOR
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EXAMPLE: 80 = BLACK
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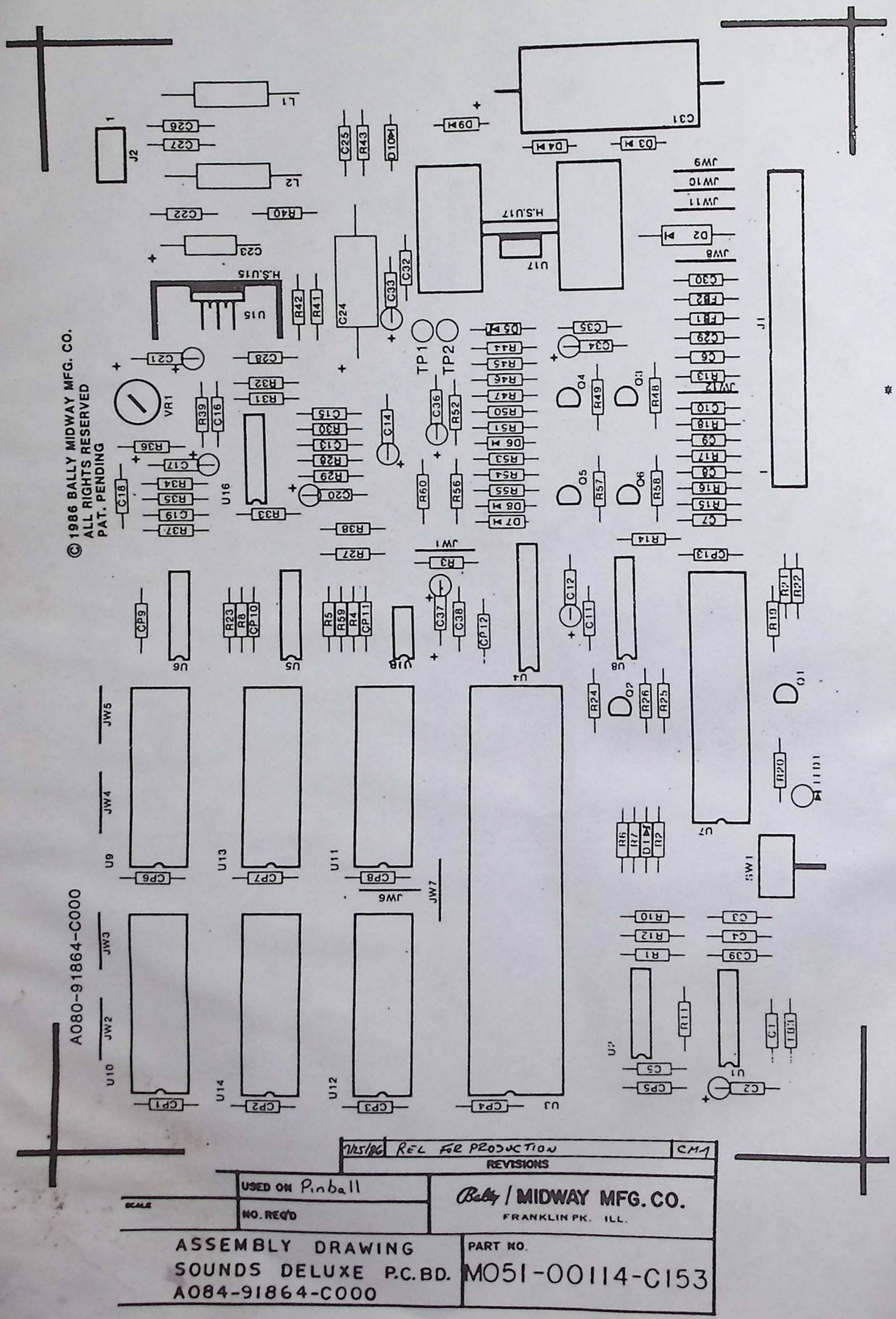

7/15/86 REL FOR PRODUCTION CM1
REVISIONS

USED ON Pinball
NO. REQ'D
Bally / MIDWAY MFG. CO.
FRANKLIN PK. ILL.

ASSEMBLY DRAWING
SOUNDS DELUXE P.C.BD.
A084-91864-C000

PART NO.
M051-00114-C153

SOUNDS DELUXE
A084-91864-C000
M051-00114-C154 Rev. 4

DESIGNATION LIST

DESIGNATION	DESCRIPTION
CP1,CP2	.1 UF AX CER
CP3-CP13	.01 UF AX CER
C1	.1 UF AX CER
C2	10 UF RD TANT
C3-C5	NOT INSERTED
C6	470 PF AX CER
C7-C10	100 PF AX CER
C11	.01 UF AX CER
* C12	47 UF AX ELEC
C13	470 PF AX CER
C14	1 UF AX TANT
C15	.01 UF AX CER
C16	68 PF AX CER
C17	.1 UF AX TANT
C18	.001 UF AX CER
C19	82 PF AX CER
C20	10 UF AX TANT
C21	1 UF AX TANT
C22	.05 UF RD CER
C23	470 UF AX ELEC
C24	1000 UF AX ELEC
C25	.1 UF AX CER
C26,C27	.22 UF AX CER
C28-C30	.1 UF AX CER
C31	4700 UF AX ELEC
C32	.01 UF AX CER
C33,C34	4.7 UF RD TANT
C35	.01 UF AX CER
C36	NOT INSERTED
C37	10 UF AX TANT
C38	.01 UF AX CER
C39	.1 UF AX CER
D1	NOT INSERTED
D2	VR330
D3,D4	1N4004
D5-D8	NOT INSERTED
D9,D10	1N4004
FB1-FB3	FERRITE BEAD
HS U15	HEATSINK TO-220
HS U17	HEATSINK TO-220
ICS U3	64 PIN I.C. SOCKET
ICS U4	20 PIN I.C. SOCKET
ICS U7	40 PIN I.C. SOCKET
ICS U8	16 PIN I.C. SOCKET
ICS U9-U14	28 PIN I.C. SOCKET

DESIGNATION LIST

DESIGNATION	DESCRIPTION
INS U15, INS U17	SIL PAD THERMAL WASHER
J1,J2	AUTO INSERT PIN TIN .045 SQ.
JW1-JW12	JUMPER WIRE
L1,L2	10 UH INDUCTOR
LED 1	GREEN LED
MH U15	SCREW, 6-32
MH U15	NUT, 6-32
MH U15	WASHER, #6 STAR
MH U17	SCREW, 4-40
MH U17	NUT, 4-40
MH U17	WASHER, #4 STAR
Q1,Q2	2N5305
Q3-Q6	NOT INSERTED
R1-R8	4.7K OHM 1/4W CRBN
R9	NOT USED
R10-R12	NOT INSERTED
R13	10K OHM 1/4W CRBN
R14	100K OHM 1/4W CRBN
R15-R18	10K OHM 1/4W CRBN
R19	47K OHM 1/4W CRBN
R20	100 OHM 1/4W CRBN
R21-R23	4.7K OHM 1/4W CRBN
R24	2.7K OHM 1/4W CRBN
R25	180 OHM 1/4W CRBN
R26	68 OHM 1/4W CRBN
R27	62K OHM 1/4W CRBN
R28	120K OHM 1/4W CRBN
R29	75K OHM 1/4W CRBN
R30	33K OHM 1/4W CRBN
R31	18K OHM 1/4W CRBN
R32	33K OHM 1/4W CRBN
R33	47K OHM 1/4W CRBN
R34	150K OHM 1/4W CRBN
R35	82K OHM 1/4W CRBN
R36	150K OHM 1/4W CRBN
R37	200K OHM 1/4W CRBN
R38	1K OHM 1/4W CRBN
R39	33K OHM 1/4W CRBN
R40	430 OHM 1/4W CRBN
R41	220 OHM 1/4W CRBN
R42	2.2 OHM 1/4W CRBN

* **NOTE:** The SOUNDS DELUXE PRINTED CIRCUIT BOARD in this game may or may not contain the capacitor C12. The absence of this capacitor will not affect the general performance of the printed circuit board. The capacitor C12 is also shown on pages 10-24 and 10-28.

SOUNDS DELUXE
A084-91864-C000
M051-00114-C154 Rev. 4

DESIGNATION LIST

DESIGNATION	DESCRIPTION
R43	1 OHM 1/4W CRBN
R44-R58	NOT INSERTED
R59	4.7K OHM 1/4W CRBN
R60	10K OHM 1/4W CRBN
SW1	PC MTG. SWITCH
TP1,TP2	TEST POINT
U1	16 MHZ COSC
U2	74LS74
U3	MC68000G8 CPU
U4	PAL16L8A-2 SDOORO
U5	74LS05
U6	74F32
U7	MC6821
U8	AD7533 DAC
U9,U10	RAM 2K X 8
U11-U14	ROM/EPROM
U15	TDA2002
U16	LM3900
U17	MC7805 REG.
U18	TL7705
VR1	10K POT.

CROSS REFERENCE

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
68 PF AX CER 5%	1	C16	0360-00800-0028
82 PF AX CER 5%	1	C19	0E47-00800-0002
100 PF AX CER	4	C7-C10	0360-00800-0046
470 PF AX CER 10%	2	C6,C13	0307-00800-0008
.001 UF AX CER 10%	1	C18	0E47-00800-0003
.01 UF AX CER 10%	1	C15	0E47-00800-0001
.01 UF AX CER	15	CP3-CP13,C11,C32 C35,C38	0360-00800-0005
.05 UF RD CER	1	C22	0360-00800-0006
.1 UF AX CER	8	CP1,CP2,C1,C25, C28-C30,C39	0360-00800-0058
.22 UF AX CER	2	C26,C27	0360-00800-0057
1 UF AX TANT	3	C14,C17,C21	0986-00800-1400
4.7 UF RD TANT	2	C33,C34	0360-00800-0008
10 UF AX TANT	3	C2,C20,C37	0986-00800-0700
47 UF AX ELEC	1	* C12	0360-00800-0042
470 UF AX ELEC	1	C23	0360-00800-0021
1000 UF AX ELEC	1	C24	0360-00800-0044
4700 UF AX ELEC	1	C31	0360-00800-0023
1 OHM 1/4W CRBN	1	R43	100E-00005-0002
2.2 OHM 1/4W CRBN	1	R42	100E-00005-0003
68 OHM 1/4W CRBN	1	R26	100E-00005-0029
100 OHM 1/4W CRBN	1	R20	100E-00005-0033
180 OHM 1/4W CRBN	1	R25	100E-00005-0039
220 OHM 1/4W CRBN	1	R41	100E-00005-0041
430 OHM 1/4W CRBN	1	R40	100E-00005-0050
1K OHM 1/4W CRBN	1	R38	100E-00005-0061
2.7K OHM 1/4W CRBN	1	R24	100E-00005-0071
4.7K OHM 1/4W CRBN	12	R1-R8,R21-R23,R59	100E-00005-0079
10K OHM 1/4W CRBN	6	R13,R15-R18,R60	100E-00005-0088
18K OHM 1/4W CRBN	1	R31	100E-00005-0093
33K OHM 1/4W CRBN	3	R30,R32,R39	100E-00005-0100
47K OHM 1/4W CRBN	2	R19,R33	100E-00005-0104
62K OHM 1/4W CRBN	1	R27	100E-00005-0107
75K OHM 1/4W CRBN	1	R29	100E-00005-0110
82K OHM 1/4W CRBN	1	R35	100E-00005-0112
100K OHM 1/4W CRBN	1	R14	100E-00005-0115
120K OHM 1/4W CRBN	1	R28	100E-00005-0118
150K OHM 1/4W CRBN	2	R34,R36	100E-00005-0120
200K OHM 1/4W CRBN	1	R37	100E-00005-0123
10K POT	1	VR1	0360-00804-0024
1N4004	4	D3,D4,D9,D10	103E-00003-0005
VR330	1	D2	0360-00801-0007

* NOTE:
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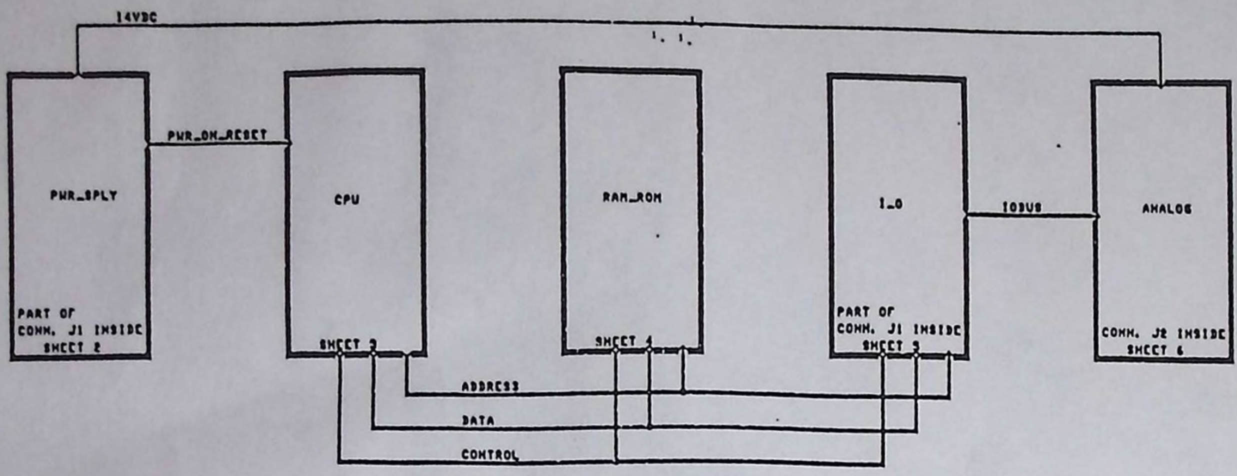
SOUNDS DELUXE
A084-91864-C000
M051-00114-C154

CROSS REFERENCE

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
2N5305	2	Q1,Q2	0360-00802-0012
74F32	1	U6	0304-00803-0059
74LS05	1	U5	0E47-00803-0002
74LS74	1	U2	0304-00803-0058
AD7533 DAC	1	U8	0304-00803-0055
16 MHZ COSC	1	U1	0304-00804-0008
LM3900	1	U16	0360-00803-0002
MC6821	1	U7	0304-00803-0054
MC68000 G8 CPU	1	U3	
MC7805 REG	1	U17	0360-00803-0050
PAL16L8A-2 SD00R0	1	U4	0E47-00803-0001
RAM 2K X 8	2	U9,U10	0E47-00803-0003
TDA2002	1	U15	0360-00803-0009
TL7705AC	1	U18	0066-447BX-XXCX
ROM/EPROM	4	U11-U14	SEE ROM/EPROM SHEET
FERRITE BEAD	3	FB1-FB3	0316-00804-0002
10 UH INDUCTOR	2	L1,L2	0360-00804-0031
16 PIN I.C. SOCKET	1	ICS U8	110E-00001-0003
20 PIN I.C. SOCKET	1	ICS U4	110E-00001-0005
28 PIN I.C. SOCKET	6	ICS U9-ICS U14	110E-00001-0010
40 PIN I.C. SOCKET	1	ICS U7	110E-00001-0011
64 PIN I.C. SOCKET	1	ICS U3	110E-00001-0016
HEATSINK TO-220	1	HS U15	112E-00001-0011
HEATSINK TO-220	1	HS U17	0E47-00804-0001
SIL PAD THERMAL WASHER	2	INS U15, INS U17	0017-00042-0319
SCREW, 6-32	1	MH U15	0017-00101-0339
NUT, 6-32	1	MH U15	0017-00103-0005
WASHER, #6 STAR	1	MH U15	0017-00104-0009
SCREW, 4-40	1	MH U17	0017-00101-0731
NUT, 4-40	1	MH U17	0017-00103-0002
WASHER, #4 STAR	1	MH U17	0017-00104-0071
AUTO INSERT PIN TIN .045 SQ.	16	J1,J2	0304-00804-0010
JUMPER WIRE	12	JW1-JW12	117E-00001-0003
GREEN LED	1	LED 1	119E-00001-0001
TEST POINT	2	TP1,TP2	0017-00007-0131
PC MTG. SWITCH	1	SW1	0986-00804-3100
PC BOARD	1	--	A080-91864-C000

8/01/86 Rev. 1 - Changed Filter Values, C13,C15,C16,C18,C19,R39 CMM
8/05/86 Rev. 2 - Removed D1 CMM.
8/11/86 Rev. 3 - Added CP11-CP13 CMM.
8/15/86 Rev. 4 - Added ICS U13, ICS U14. Fixed Desig. list U5, U6.
Corrected qty. of Ferrite Bead.

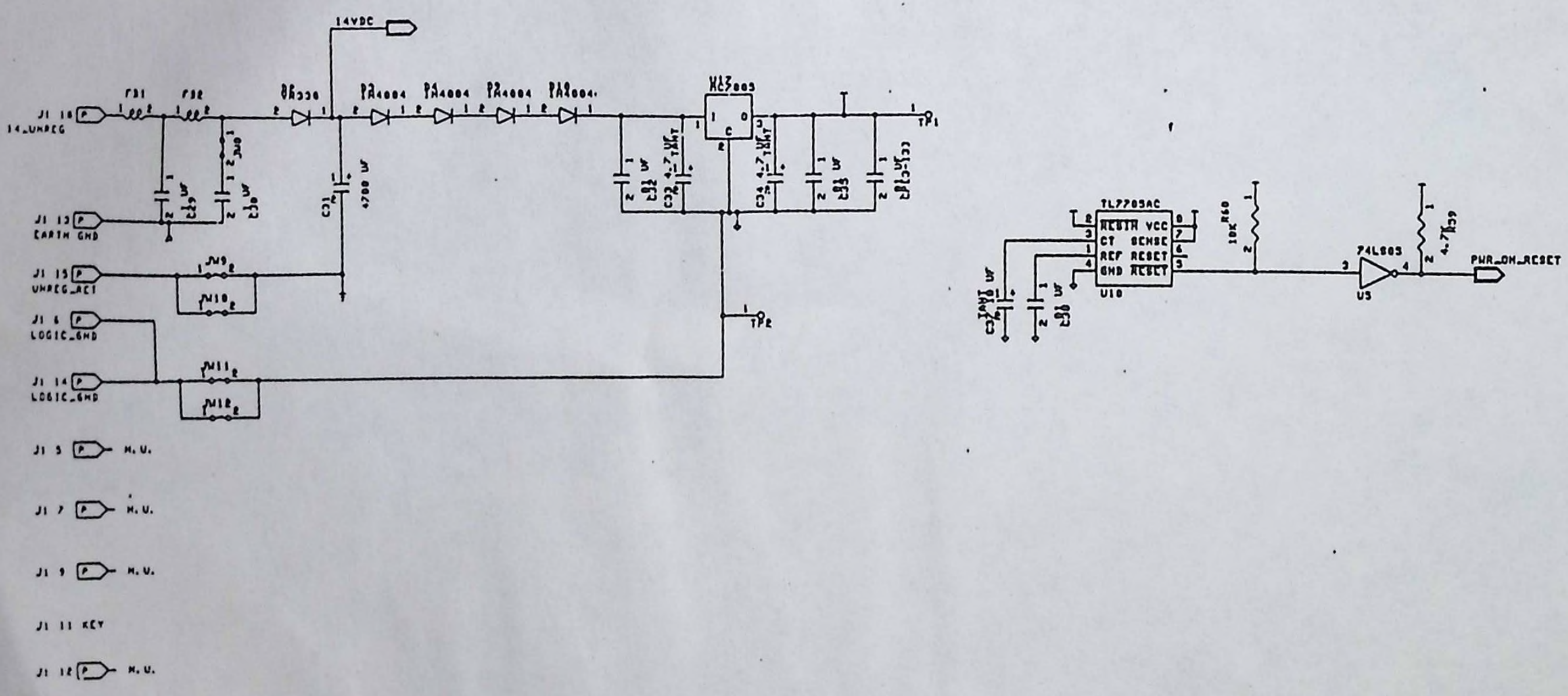


8/11/86 REV 3 - Changed page 2. CMM
8/4/86 REV 2 - Changed page 3. CMM
8/1/86 REV 1 - Changed page 6

NOTES: C. MCDNICK	BALLY MIDWAY MFG. CO.
1 PER 24 JULY 86	SOUNDS DELUXE A084-91864-C000 M051-00114-C155
	SHEET 1 OF 6 | REV

LAST USED: C39/CP13/D10/F32/J2/JW12/L2/R60/SW1/TP2/LED1/VR1
NOT INSERTED: C3-C5/C36/D1/D5-D8/Q3-Q6/R10-R12/R44-R58
NOT USED: R9

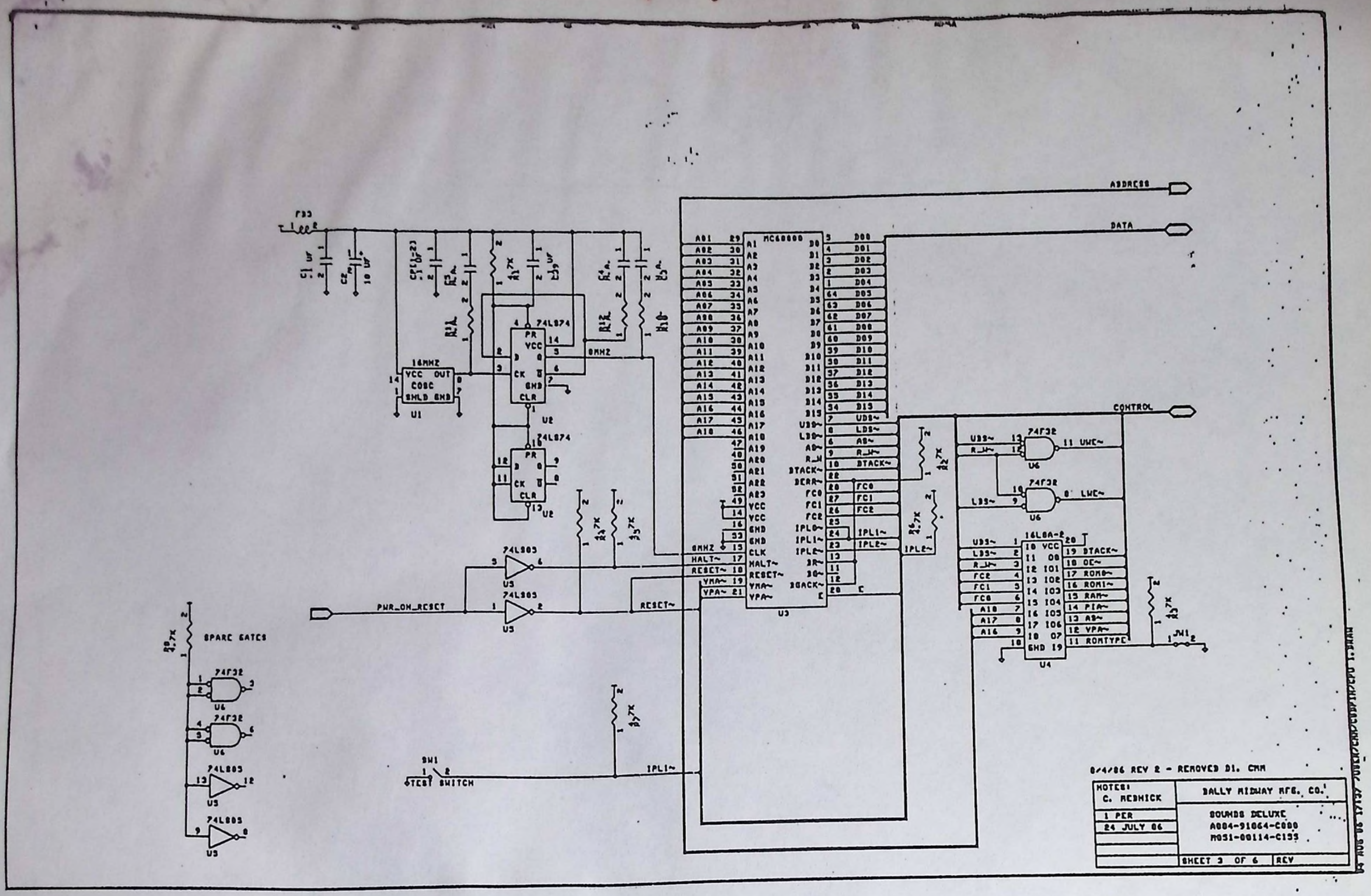
11 AUG 86 14143 /USER/CAM/CSDPIN 1.DRAW



8/11/86 REV 3 - Added CP11-CP13. CMM

NOTES: C. MCDNICK	BALLY MIDWAY MFG. CO.
1 PER 24 JULY 86	SOUNDS DELUXE A084-91864-C000 M051-00114-C155
	SHEET 2 OF 6 | REV

11 AUG 86 14136 /USER/CAM/CSDPIN/PWR_SPLY 1.DRAW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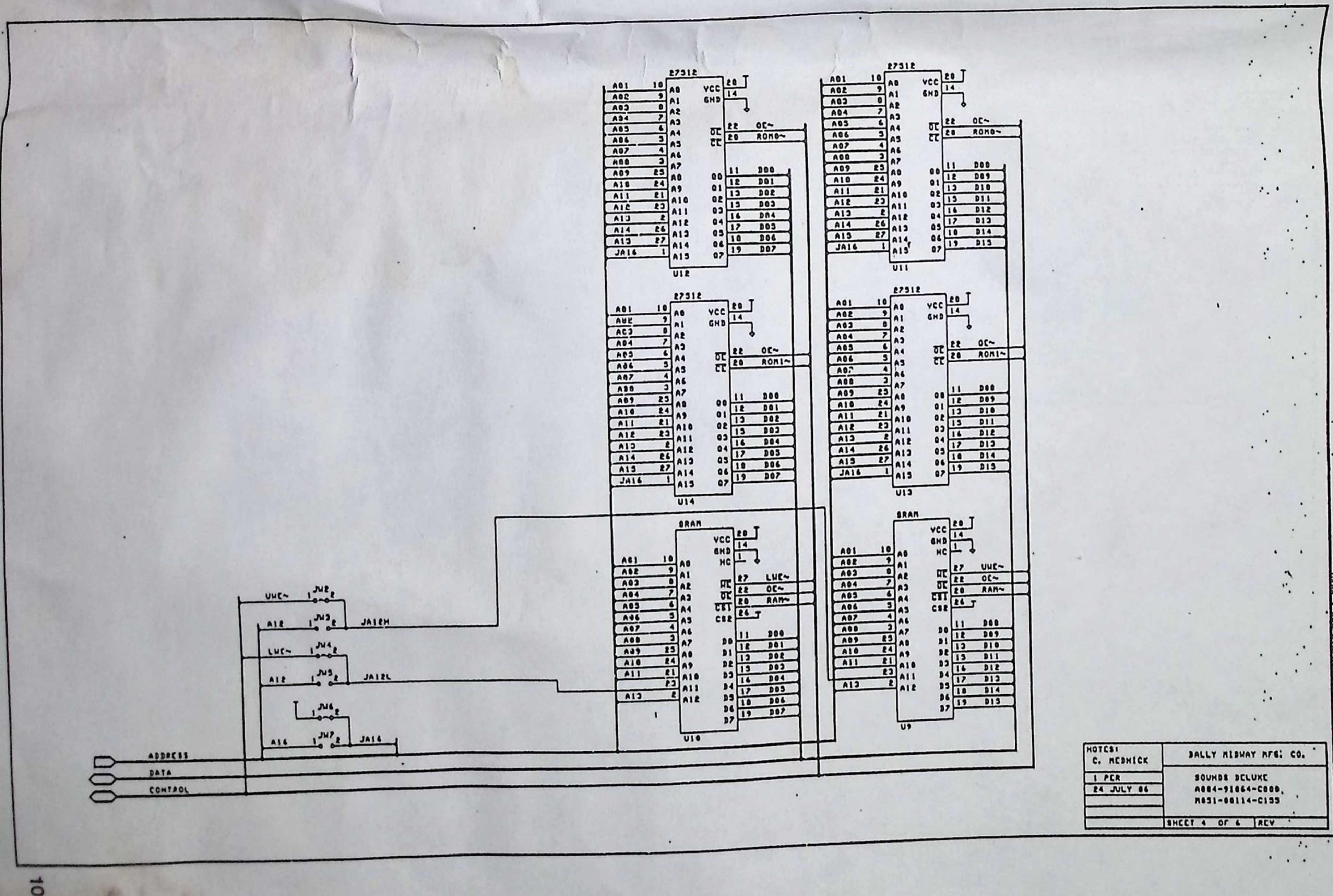
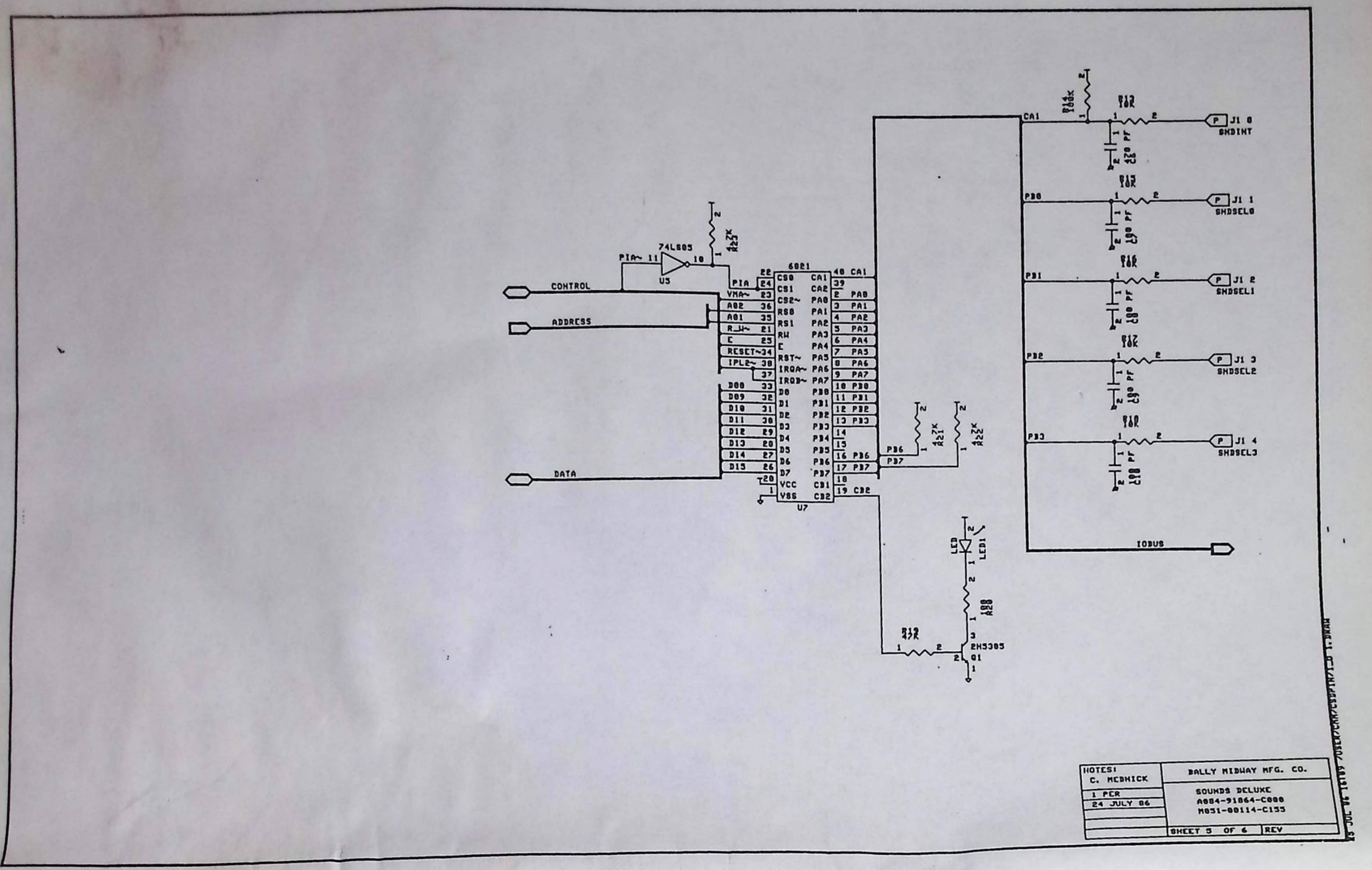
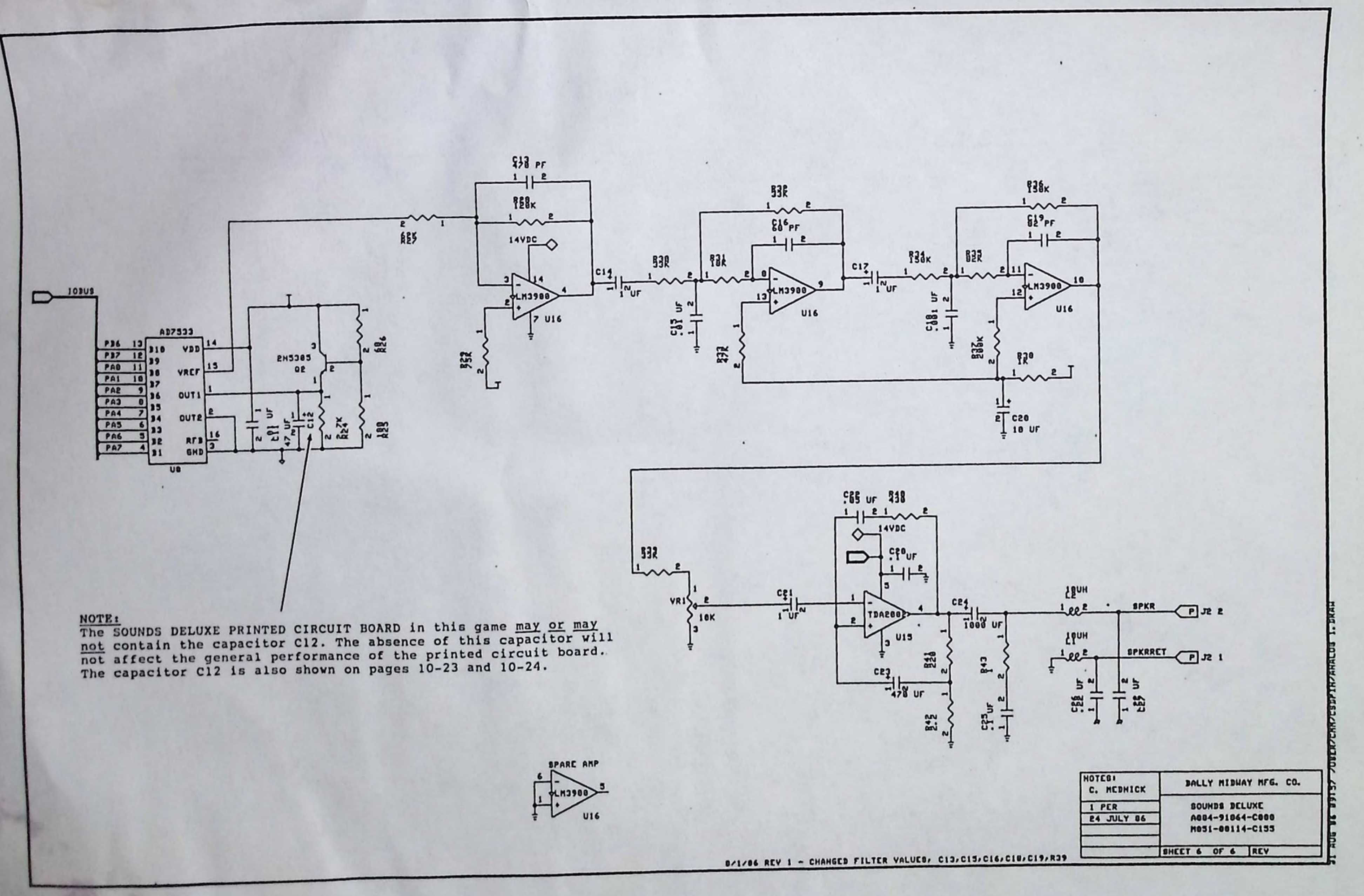
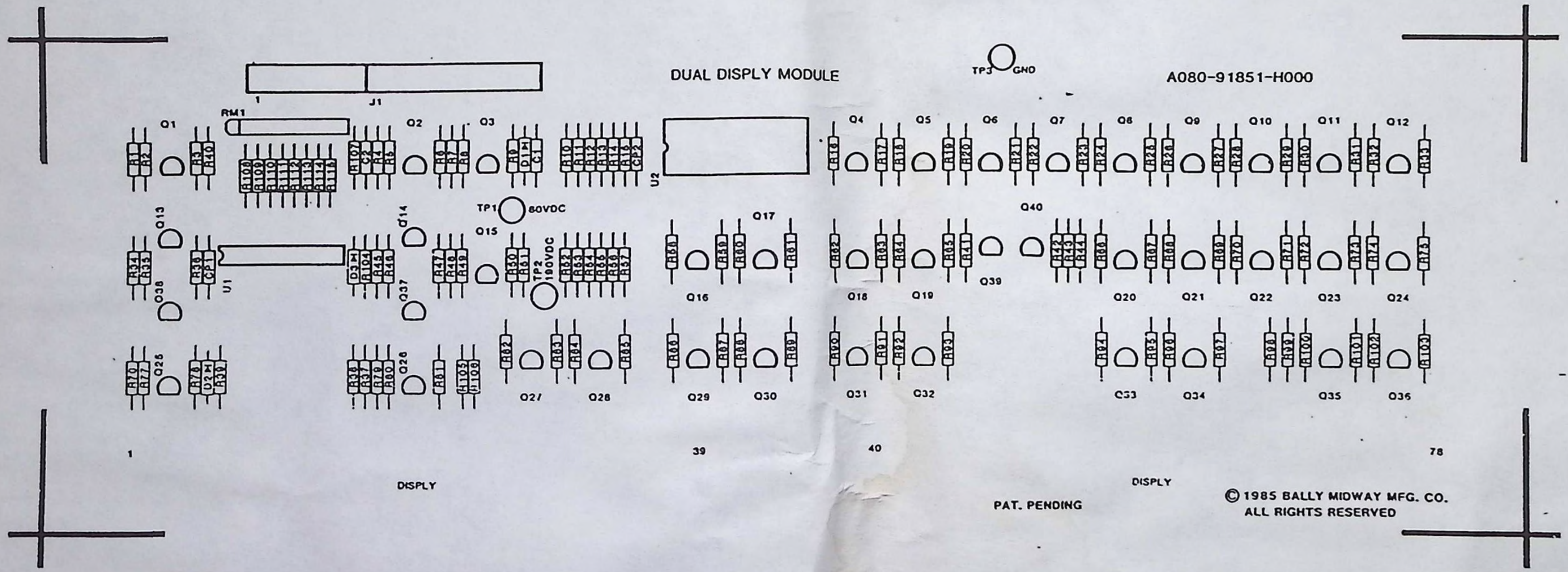
DATA
CONTROL
MC68000
U3
74LS74
U2
14MHZ
VCC OUT
COSC
SHLD GND
U1
8MHZ
74LS03
U5
PWR_ON_RESET
RESET~
HALT~
IPL1~
IPL2~
74F32
U6
UWE~
LWE~
16L8A-2
U4
DTACK~
OE~
ROM0~
ROM1~
RAM~
PIA~
AS~
VPA~
ROMTYPE
JW1
SW1
TEST SWITCH
SPARE GATES
8/4/86 REV 2 - REMOVED D1. CMM
NOTES:
C. MEDNICK
1 PER
24 JULY 86
BALLY MIDWAY MFG. CO.
SOUNDS DELUXE
A084-91064-C000
M051-00114-C155
SHEET 3 OF 6
REV


27512
U11
U12
U13
U14
8RAM
U9
U10
ROM0~
ROM1~
OE~
UWE~
LWE~
RAM~
JW2
JW3
JW4
JW5
JW6
JW7
JA12H
JA12L
JA14
JA16
ADDRESS
DATA
CONTROL
NOTES:
C. MEDNICK
1 PER
24 JULY 86
BALLY MIDWAY MFG. CO.
SOUNDS DELUXE
A084-91064-C000
M051-00114-C155
SHEET 4 OF 6
REV





NOTE:
The SOUNDS DELUXE PRINTED CIRCUIT BOARD in this game may or may not contain the capacitor C12. The absence of this capacitor will not affect the general performance of the printed circuit board. The capacitor C12 is also shown on pages 10-23 and 10-24.



THIS DWG. IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ...... ±.1/64 DECIMAL .... ±.005 HOLE DIA. .... +.002—.000 ANGLE .... ±1/2° DO NOT SCALE DWG.	FIRST USED ON PINBALL DRN JBB DATE 5/15/87 SCALE FULL MECH CHK MAT'L ELEC CHK JBB FINISH	Bally/MIDWAY MFG. CO. FRANKLIN PARK, IL 60131 ASSEMBLY DRAWING DUAL DISPLAY MODULE A084-91851-H000	REL. FOR PRODUCTION 5/15/87 JB REVISIONS PART NO. M0-5-1-0-0-3-6-5-H0-3-3

10-29

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 1 of 5) REV.1

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
R1	1.5K 1/4W 5% CARBON
R2	820 OHM 1/4W 5% CARBON
R3	300K 1/4W 5% CARBON
R4	1.5K 1/4W 5% CARBON
R5	510 OHM 1/4W 5% CARBON
R6	300K 1/4W 5% CARBON
R7	1.5K 1/4W 5% CARBON
R8	820 OHM 1/4W 5% CARBON
R9	300K 1/4W 5% CARBON
R10 - R15	20K 1/4W 5% CARBON
R16	9.1K 1/4W 5% CARBON
R17	100K 1/4W 1% METAL FILM
R18	2.2K 1/4W 5% CARBON
R19	300K 1/4W 5% CARBON
R20	9.1K 1/4W 5% CARBON
R21	100K 1/4W 1% METAL FILM
R22	2.2K 1/4W 5% CARBON
R23	300K 1/4W 5% CARBON
R24	9.1K 1/4W 5% CARBON
R25	100K 1/4W 1% METAL FILM
R26	2.2K 1/4W 5% CARBON
R27	300K 1/4W 5% CARBON
R28	9.1K 1/4W 5% CARBON
R29	100K 1/4W 1% METAL FILM
R30	9.1K 1/4W 5% CARBON
R31	100K 1/4W 1% METAL FILM
R32	9.1K 1/4W 5% CARBON
R33	100K 1/4W 1% METAL FILM
R34	1.5K 1/4W 5% CARBON
R35	820 OHM 1/4W 5% CARBON
R36	300K 1/4W 5% CARBON
R37	300K 1/4W 5% CARBON
R38	1.5K 1/4W 5% CARBON
R39	1K 1/4W 5% CARBON
R40	100K 1/4W 5% CARBON
R41	100K 1/4W 5% CARBON
R42	1K 1/4W 5% CARBON
R43	1.5K 1/4W 5% CARBON
R44	300K 1/4W 5% CARBON
R45	1.5K 1/4W 5% CARBON
R46	820 OHM 1/4W 5% CARBON
R47	300K 1/4W 5% CARBON
R48	1.5K 1/4W 5% CARBON
R49	820 OHM 1/4W 5% CARBON
R50	300K 1/4W 5% CARBON
R51	100K 1/4W 1% METAL FILM
R52 - R57	2.2M 1/4W 5% CARBON
R58	9.1K 1/4W 5% CARBON

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 2 of 5) REV. 1

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
R59	100K 1/4W 1% METAL FILM
R60	100K 1/4W 1% METAL FILM
R61	9.1K 1/4W 5% CARBON
R62	9.1K 1/4W 5% CARBON
R63	100K 1/4W 1% METAL FILM
R64	9.1K 1/4W 5% CARBON
R65	100K 1/4W 1% METAL FILM
R66	9.1K 1/4W 5% CARBON
R67	100K 1/4W 1% METAL FILM
R68	9.1K 1/4W 5% CARBON
R69	100K 1/4W 1% METAL FILM
R70	300K 1/4W 5% CARBON
R71	2.2K 1/4W 5% CARBON
R72	300K 1/4W 5% CARBON
R73	2.2K 1/4W 5% CARBON
R74	300K 1/4W 5% CARBON
R75	2.2K 1/4W 5% CARBON
R76	1.5K 1/4W 5% CARBON
R77	820 OHM 1/4W 5% CARBON
R78	300K 1/4W 5% CARBON
R79	1.5K 1/4W 5% CARBON
R80	820 OHM 1/4W 5% CARBON
R81	300K 1/4W 5% CARBON
R82	300K 1/4W 5% CARBON
R83	2.2K 1/4W 5% CARBON
R84	100K 1/4W 1% METAL FILM
R85	9.1K 1/4W 5% CARBON
R86	300K 1/4W 5% CARBON
R87	2.2K 1/4W 5% CARBON
R88	2.2K 1/4W 5% CARBON
R89	300K 1/4W 5% CARBON
R90	300K 1/4W 5% CARBON
R91	2.2K 1/4W 5% CARBON
R92	300K 1/4W 5% CARBON
R93	2.2K 1/4W 5% CARBON
R94	300K 1/4W 5% CARBON
R95	2.2K 1/4W 5% CARBON
R96	300K 1/4W 5% CARBON
R97	2.2K 1/4W 5% CARBON
R98	10M 1/4W 5% CARBON
R99	1M 1/4W 5% CARBON
R100	300K 1/4W 5% CARBON
R101	2.2K 1/4W 5% CARBON
R102	100K 1/4W 1% METAL FILM
R103	9.1K 1/4W 5% CARBON
R104	150K 1/4W 5% CARBON
R105	10M 1/4W 5% CARBON
R106	1M 1/4W 5% CARBON
R107	10K 1/4W 5% CARBON
R108-R115	20K 1/4W 5% CARBON
RM1	100K 10 PIN SIP

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 3 of 5) REV. 1

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1	.01UF 500V CER.
C2	100PF 50V AX. CER.
CP1, CP2	.01UF 50V CER.
D1	1M110ZS10 110V ZENER DIODE
D2,D3	1N4148 DIODE
Q1 - Q4	MPS-A-42 NPN XSTR
Q5	2N5401 PNP XSTR
Q6	MPS-A-42
Q7	2N5401
Q8	MPS-A-42
Q9	2N5401
Q10 - Q21	MPS-A-42
Q22 - Q24	2N5401
Q25	MPS-A-42
Q26	MPS-A-42
Q27	2N5401
Q28	MPS-A-42
Q29 - Q35	2N5401
Q36 - Q40	MPS-A-42
U1	74HC373 CMOS OCTAL LATCH
U2	14514 1-16 DECODER
DISPLAY 1	14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY
J1	.025 SQ. PINS
TP1, TP2, TP3	TEST LOOPS
	FOAM TAPE
	BUMPER
	DISPLAY MTG. CLIPS
	SCREWS
M051-00365- A041	DISPLAY MTG. PROCEDURE
A090-91851-H000	DUAL DISPLAY MODULE P.C.B.

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 4 of 5) REV. 1

CROSS REFERENCE LIST

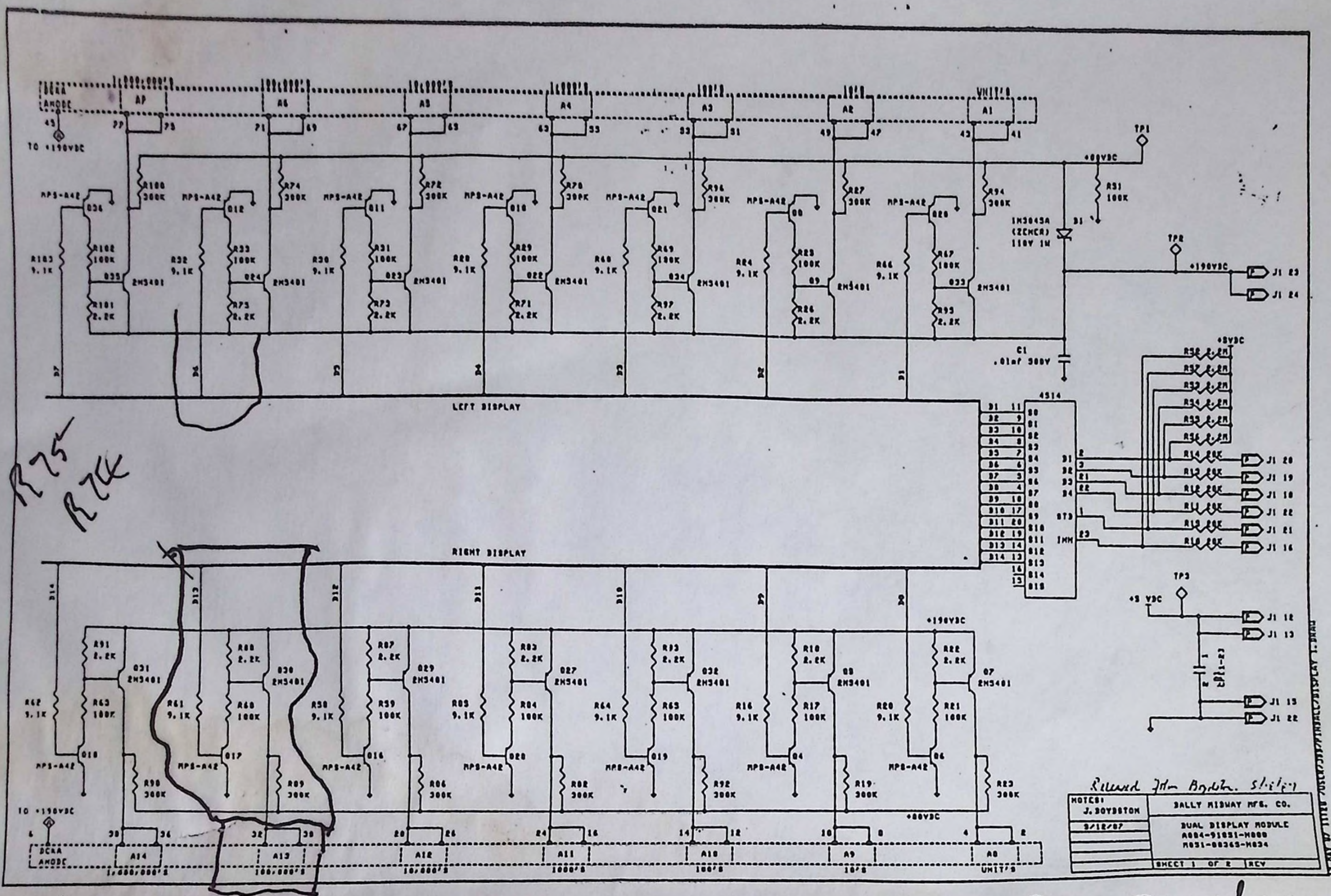
DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
510 OHM 1/4W 5% CARBON	1	R5	100E-00005-0053
820 OHM 1/4W 5% CARBON	7	R2,R8,R35,R46 R49,R77,R80	100E-00005-0058
1K 1/4W 5% CARBON	2	R39,R42	100E-00005-0061
1.5K 1/4W 5% CARBON	10	R1,R4,R7,R34,R38 R43,R45,R48 R76,R79	100E-00005-0065
2.2K 1/4W 5% CARBON	14	R18,R22,R26,R71 R73,R75,R83,R87 R88,R91,R93,R95 R97,R101	100E-00005-0069
9.1K 1/4W 5% CARBON	14	R16,R20,R24,R28 R30,R32,R58,R61 R62,R64,R66,R68 R85,R103	100E-00005-0087
10K 1/4W 5% CARBON	1	R107	100E-00005-0088
20K 1/4W 5% CARBON	14	R10-R15,R108-R115	100E-00005-0095
100K 1/4W 5% CARBON	2	R40,R41	100E-00005-0115
100K 1/4W 1% METAL FILM	15	R17,R21,R25,R29 R31,R33,R51,R59 R60,R63,R65,R67 R69,R84,R102	100E-00001-0046
150K 1/4W 5% CARBON	1	R104	100E-00005-0120
300K 1/4W 5% CARBON	24	R3,R6,R9,R19,R23 R27,R36,R37,R44, R47,R50,R70,R72, R74,R78,R81,R82, R86,R89,R90,R92, R94,R96,R100	100E-00005-0127
1.0M OHM 1/4W 5% CARBON	2	R99,R106	100E-00005-0140
2.2M OHM 1/4W 5% CARBON	6	R52 - R57	100E-00005-0147
100K 10 PIN SIP	1	RM1	102E-00004-0045
10.0M OHM 1/4W 5% CARBON	2	R98,R105	100E-00005-0162
100PF AX. CER.	1	C2	0639-00800-0003
.01UF	2	CP1,CP2	0360-00800-0005
.01UF 500V	1	C1	0360-00800-0013
1N4148	2	D2,D3	103E-00002-0005
1M110ZS10 110V ZENER DIODE	1	D1	103E-00001-0028
2N5401 PNP XSTR	14	Q5,Q7,Q9,Q22,Q23 Q24,Q27,Q29,Q30 Q31,Q32,Q33,Q34 Q35	0360-00802-0006
MPS-A-42 NPN XSTR	26	Q1-Q4,Q6,Q8,Q10- Q21,Q25,Q26,Q28 Q36-Q40	0360-00802-0007
14514 1-16 DECODER	1	U2	0360-00803-0013
74HC373 OCTAL LATCH	1	U1	0365-00803-0015
.025SQ. PINS	23	J1	0304-00804-0009
14 DIGIT, 9 SEGMENT GAS DISCHARGE DISPLAY	1	DISPLAY 1	119E-00002-0006
TEST LOOPS	3	TP1 - TP3	0017-00007-0131

DUAL DISPLAY MODULE
A084-91851-H000
M051-00365-H042 (Page 5 of 5) REV. 1

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
FOAM TAPE	2		0017-00081-0289
BUMPER	1		0017-00041-0598
DISPLAY MTG. CLIP	2		0365-00174-00XF
SCREW	2		0017-00101-0175
DISPLAY MTG. PROCEDURE	1		M051-00365-A041
DUAL DISPLAY MODULE PCB	1		A080-91851-H000

5/20/87 REV. 1 - CORRECTION TO DISPLAY MTG. PROCEDURE PART NO. JBB

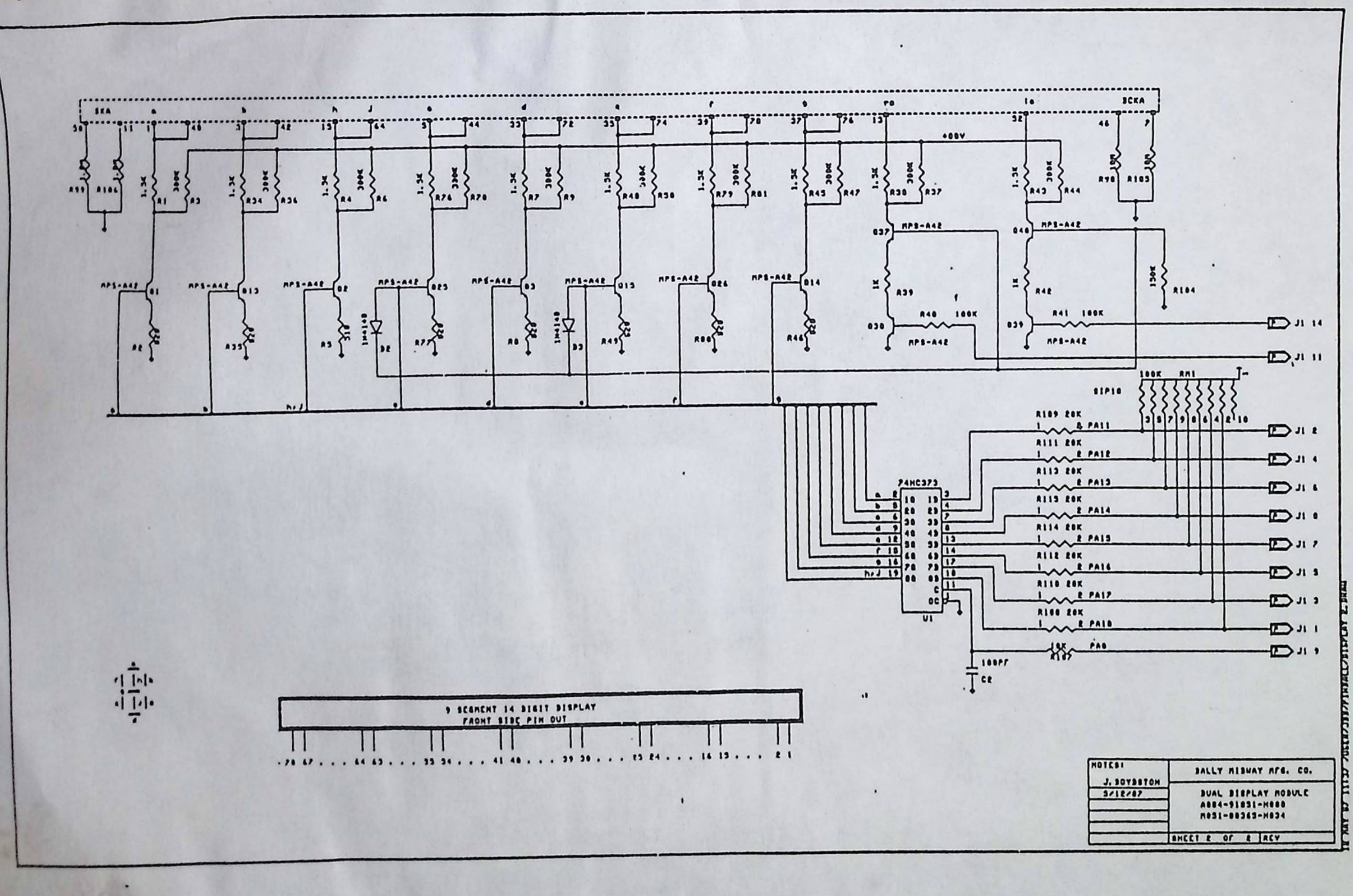


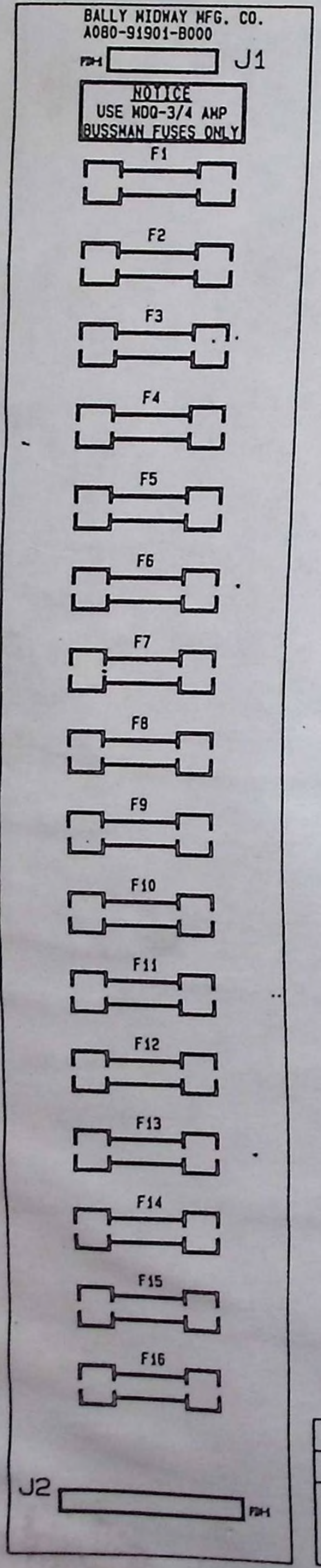
Released John Boydston 5/1?/87

BROKEN LINE IN DISPLAY

R60 100K
R61 9.1K
Q30
R89 300K
R88 2.2K
Q9 ← Replaced.

order Display to Repair





BRIGHT LIGHT FUSE BOARD
A084-91901-B000
M051-00114-B211

CROSS REFERENCE/DESIGNATION LIST

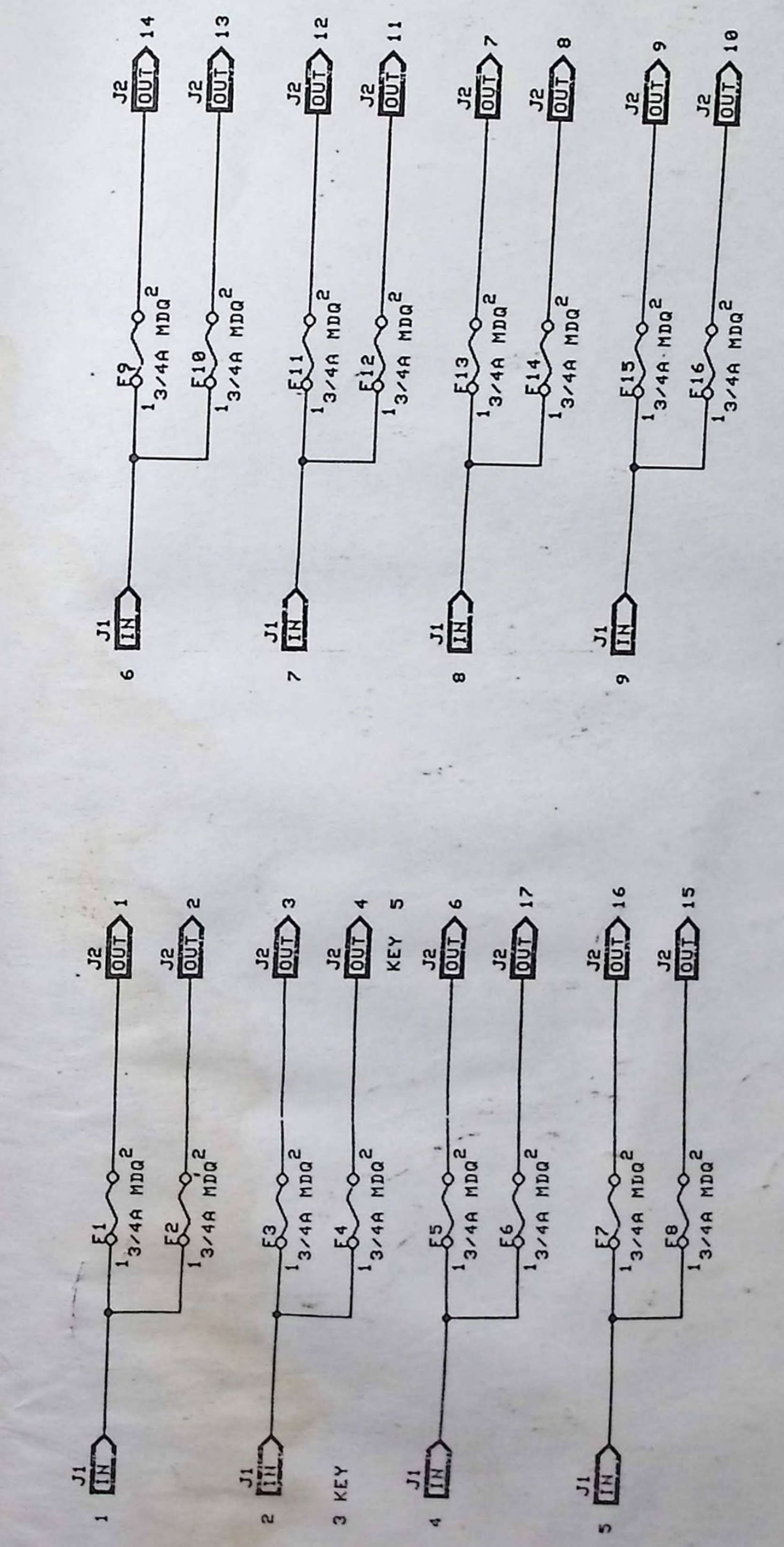
DESCRIPTION	QTY	DESIGNATION	PART NUMBER
AUTO INSERT PINS .025	8	J1	0304-00804-B000
AUTO INSERT PINS .025	16	J2	0304-00804-B000
PCB FUSE CLIPS	32	F1-F16	0017-00071-0034
BRIGHT LIGHT FUSE BOARD	1	PCB	A084-91901-B000

Released for Production
JBB 2/4/88

REVISIONS

PROJECT ENG: J. BOYDSTON		USED ON 0365	BALLY/MIDWAY MFG.CO. FRANKLIN PARK ILL.
DO NOT SCALE DWG.	HEAT TREAT	SCALE FULL	NO.REQD 1 PER
TOLERANCES DECIMAL +/-.005 HOLE DIA. +.002-.000	DRN. D.B.S. CKD. DATE 01/18/88	MATL. .062" FR-4 FINISH	ASSEMBLY DRAWING BRIGHT LIGHTS FUSE PCB
			PART NO. M051-00114-B210

04 FEB 88 10:10 /USER/JBB/PINBALL/FUZ_BD_1.DRAW



Released for Production JBB 2/4/88

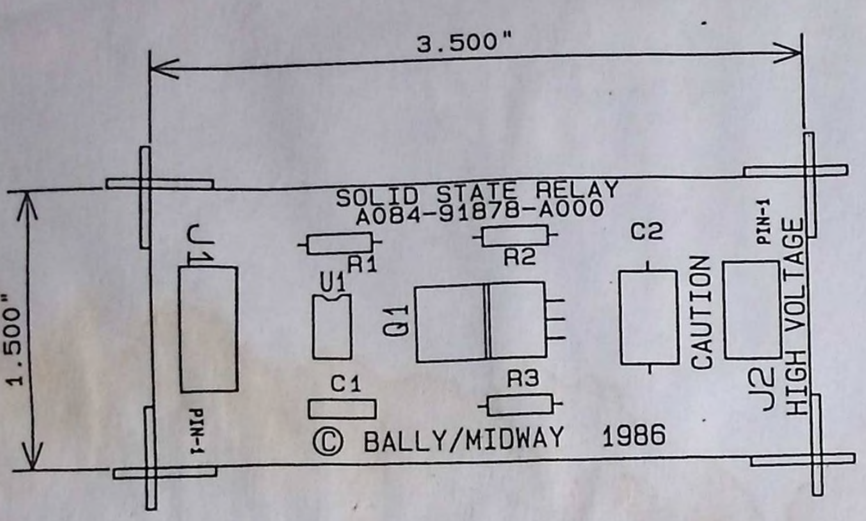
NOTES: J. BOYDSTON 02-04-88	BALLY MIDWAY MFG. CO. BRIGHT LIGHTS FUSE PCB A084-91901-B000 M051-00114-B212
SHEET 1 OF 1	REV

SOLID STATE RELAY
A084-91878-A000
M051-00114-A174

Release 12-2-86
RK

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1	.1UF 50V AX. CER. CAP
C2	.1UF 400V POLYESTER CAP
R1	100 OHM 1/4W 5%
R2	180 OHM 1/4W 5%
R3	1.8K 1/4W 5%
Q1	T2322 TRIAC
U1	MOC3031 OPTO COUPLER
J1	KK156 MACHINE INSERT PINS
J2	CABLE CONNECTION
PCMH1-PCMH4	P.C. MTG. HARDWARE
A080-91878-A000	P.C. BOARD

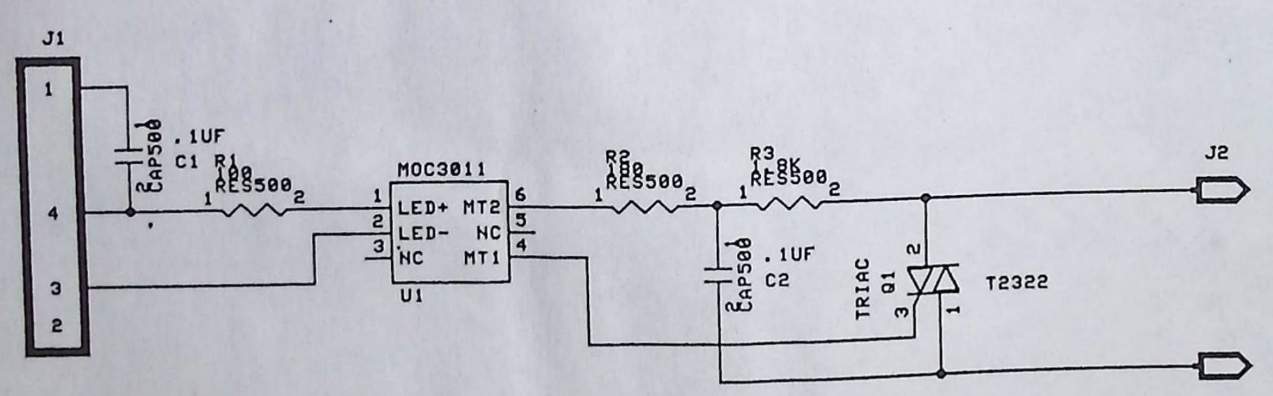


CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
.1UF 50V AX. CER.	1	C1	0C68-00800-0005
.1UF 400V POLYESTER	1	C2	0E35-00800-0001
100 OHM 1/4W 5%	1	R1	100E-00005-0033
180 OHM 1/4W 5%	1	R2	100E-00005-0039
1.8K 1/4W 5%	1	R3	100E-00005-0067
T2322 TRIAC	1	Q1	0365-00804-0019
MOC3031 OPTO COUPLER	1	U1	120E-00002-0002
KK156 PLUS	3	J1	0304-00804-0010
CABLE CONNECTION	1	J2	A639-00024-0000
P.C. MTG. HDR W	4	PCMH1-PCMH4	0017-00042-0320
P.C. BOARD	1	-	A080-91878-A000

Released 12-2-86 RK

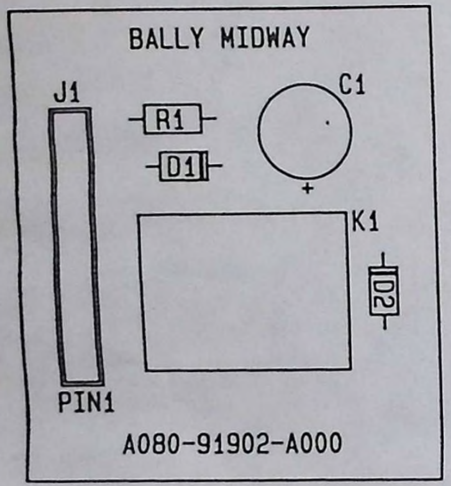
BALLY MIDWAY MFG. CO.			
.062" FR-400	J.S. 10/17/86	ASSEMBLY DRAWING SOLID STATE RELAY PC A084-91878-A000	M051-00114-A173



NOTES:	BALLY MIDWAY MFG. CO.
R. KOHAN Released 12-2-86	SOLID STATE RELAY A084-91878-A000 M051-00114-A175
	SHEET 1 OF 1 REV

86 OCT 86 10:18 /USER/RAP/STRANGE/SSR 1.DRAW

AUX COIL DRIVE
A084-91902-A000
M051-00114-A214

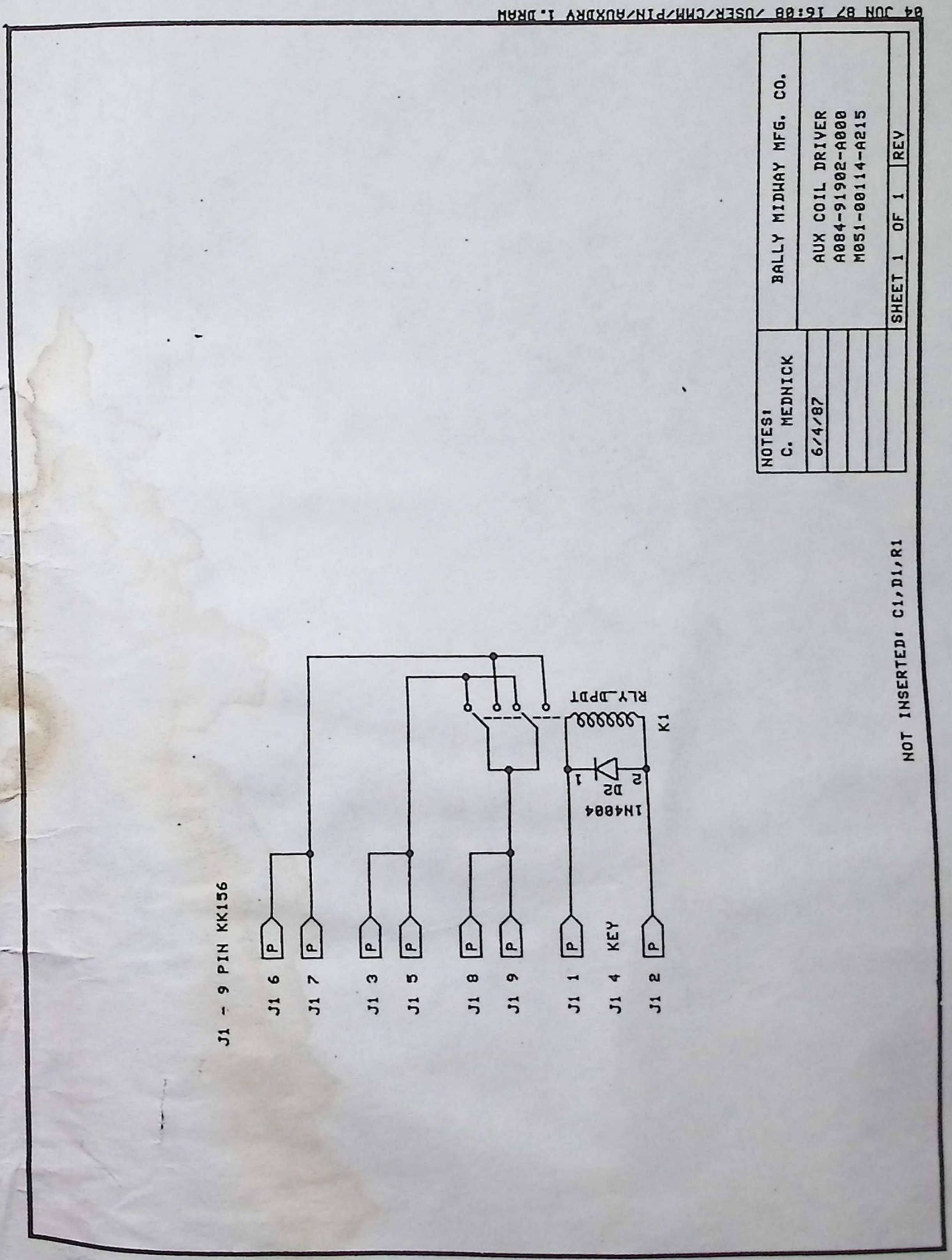


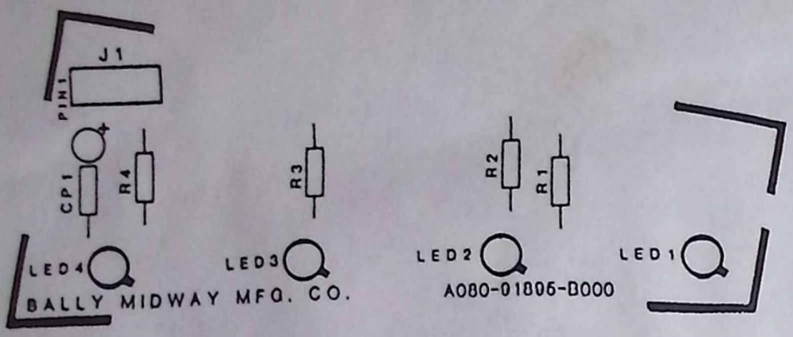
CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NO.
1N4004 DIODE	1	D2	103E-00003-0005
.045 SQ. PIN	8	J1	0304-00804-0010
RELAY	1	K1	114E-00001-0011
NOT INSERTED	3	C1,D1,R1	
AUX COIL DRIVER PCB	1		A080-91902-A000

6/4/87 - Released for Production. CMM

BALLY MIDWAY MFG. CO.			
PROJECT ENG. C. MEDNICK	D.B.S. 05/28/87	ASSEMBLY DRAWING AUX. COIL DRIVER BD.	M051-00114-A213





4-POS EMITTER
A084-91895-B000
M051-00114-B205 (REV. 1)

CROSS REFERENCE LIST

DESCRIPTION	QTY.	DESIGNATION NO.	PART NOS.
10MF CAP AX. TANT	1	CP1	0986-00800-3400
68 OHM 1/2W 5%	4	R1-R4	100E-00006-0020
MLED 930 IR EMIT DIODE	4	LED 1- LED 4	119E-00003-0004
HEADER KK100 4 PIN OMIT #2	1	J1	0017-00021-1878
4 POS. EMITTER PCB	1		A080-91895-B000

8/3/87 - RELEASED FOR PRODUCTION JBB
JBB 8/6/87 - REV. 1 Conn. Chng. JBB

B	New Release JBB	8/3/87

REVISIONS

PROJECT ENG: J. BOYDSTON

DO NOT SCALE DWG.

DIM. TOLERANCES UNLESS SPECIFIED
CONCENTRICITY T.I.R. 003
FRACTIONAL ± 1/64
DECIMAL ± .005
HOLE DIA +.002-.000

DRN. DBS
CKD.
DATE 8/3/87

HEAT TREAT
MAT'L.
FINISH

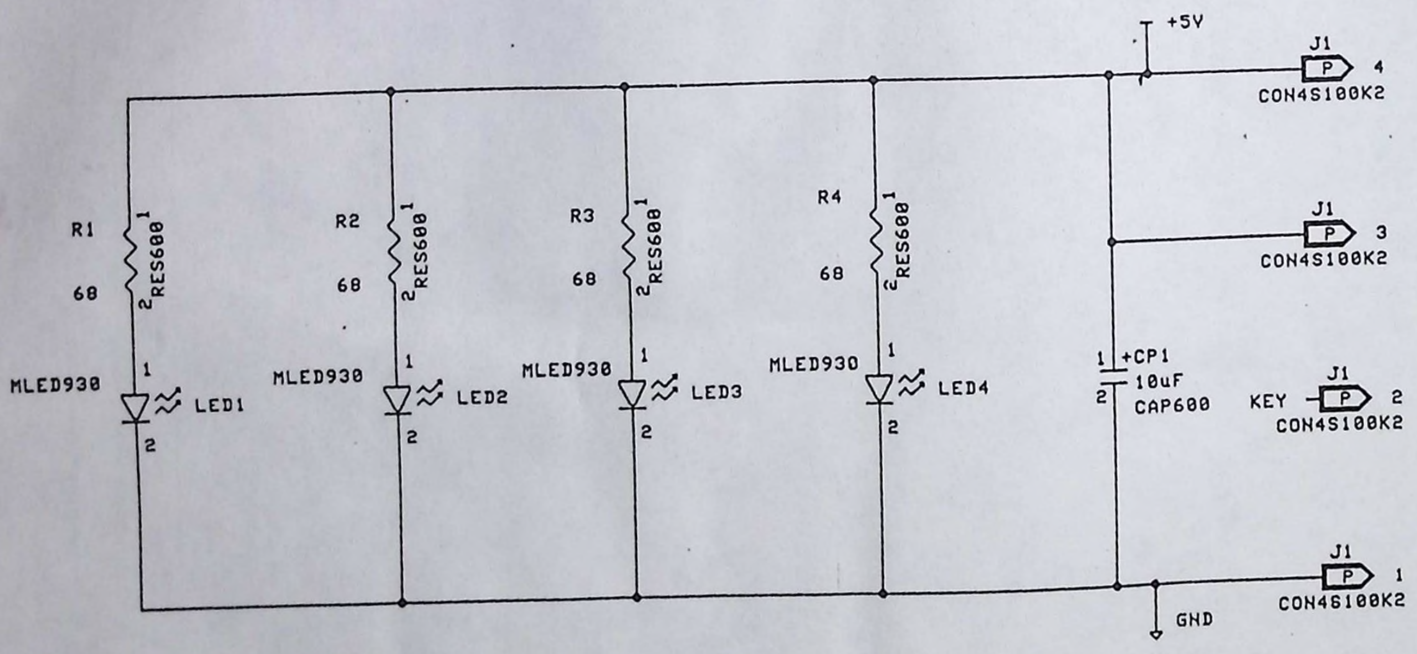
SCALE FULL

USED ON 0H06
NO. REQ'D 1 PER

ASSEMBLY DRAWING
4-POS. EMITTER PCB
(A084-91895-B000)

Bally / MIDWAY MFG. CO.
FRANKLIN PK. ILL.

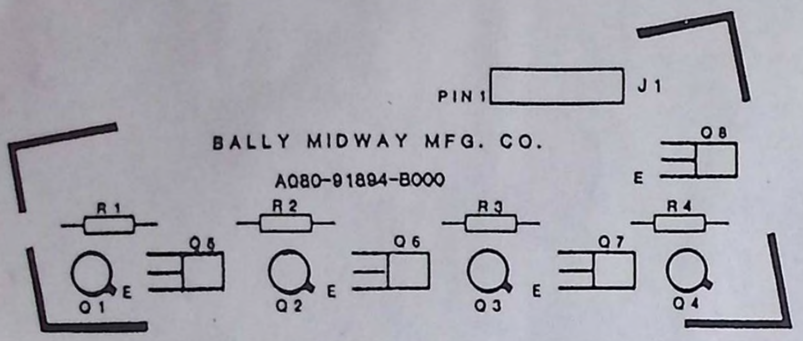
PART NO.
M051-00114-B204



Released for Production JBB

NOTES:	BALLY MIDWAY MFG. CO.
8/3/87 J. BOYDSTON	4 POSITION EMITTER PCB A084-91895-B000 M051-00114-B206
	SHEET 1 OF 1 REV

04 AUG 87 09:44 /USER/JBB/PINBALL/0H06/EMITTER 1.DRAW



4-POS. DETECTOR
A084-91894-B000
M051-00114-B202 (REV. 1)

CROSS REFERENCE LIST

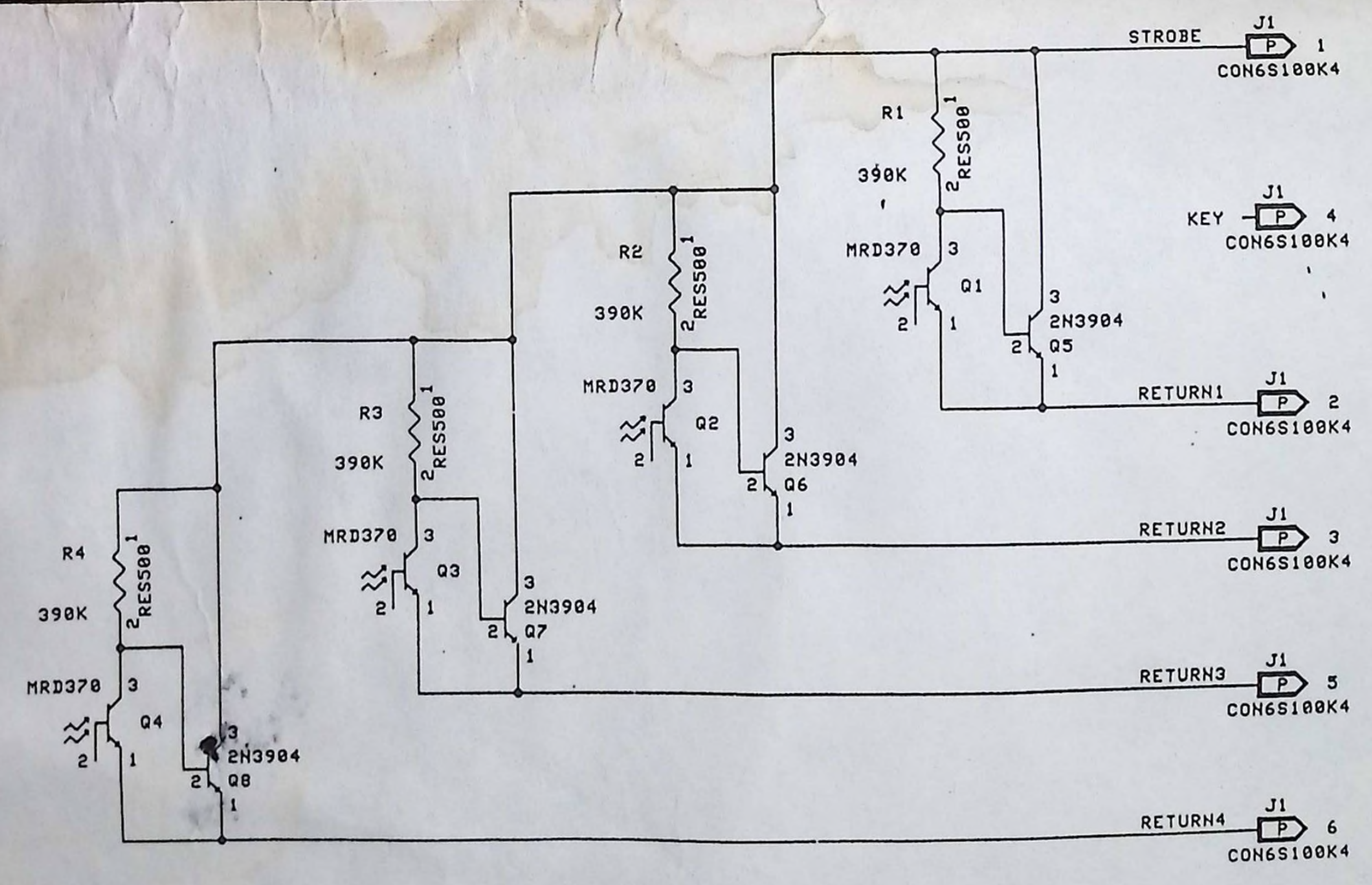
DESCRIPTION	QTY.	DESIGNATION	PART NOS.
390K OHM 1/4W 5%	4	R1-R4	100E-00005-0130
2N3904 NPN XSTR	4	Q5-Q8	104E-00001-0006
MRD370 PHOTO XSTR	4	Q1-Q4	119E-00003-0001
HEADER KK100 6 PIN OMIT #4	1	J1	0017-00021-1848
4-POS. DETECTOR PCB	1		A080-91894-B000

8/3/87 - RELEASED FOR PRODUCTION JBB
JBB 8/6/87 - REV. 1 Conn. Chng. JBB

B	New Release	JBB	4/3/87

REVISIONS

PROJECT ENG: J. BOYDSTON		USED ON OH06	Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.
DO NOT SCALE DWG.	HEAT TREAT	SCALE FULL	NO. REQ'D 1 PER
DIM. TOLERANCES UNLESS SPECIFIED CONCENTRICITY T.I.R .003 FRACTIONAL ... 1/64 DECIMAL ... .005 HOLE DIA ... +.002-.000	DRN. DBS CKD. DATE 4/3/87	MAT'L. FINISH	ASSEMBLY DRAWING 4-POS. DETECTOR PCB (A084-91894-B000)	PART NO. M051-00114-B201



Released for Production JBB

NOTES:	BALLY MIDWAY MFG. CO.
8/3/87 J. BOYDSTON	4 POSITION DETECTOR PCB A084-91894-B000 M051-00114-B203
	SHEET 1 OF 1 | REV

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BALLY MIDWAY'S BLACKWATER 100
GAME #H07
ROM/EPROM LISTING

UNPROGRAMMED 6803 CONTROL BOARD #A084-91786-G000
PROGRAMMED 6803 CONTROL BOARD #A084-91786-AH07

POS.	PART NUMBER
U2	H07A-12601-0000
U3	H07A-12602-0000

CONTROL BOARD JUMPER WIRE CONFIGURATION

	JUMPERS										
	JW1	JW2	JW3	JW4	JW5	JW6	JW7	JW8	JW9	JW10	JW11
IN		X		X		X			X	X	
OUT	X		X		X		X	X			X

UNPROGRAMMED SOUNDS DELUXE BOARD #A084-91864-C000
PROGRAMMED SOUNDS DELUXE BOARD #A084-91864-AH07

POS.	PART NUMBER
U11	H07A-12603-0000
U12	H07A-12604-0000
U13	H07A-12605-0000
U14	H07A-12606-0000

SOUNDS DELUXE BOARD JUMPER WIRE CONFIGURATION

	JUMPERS											
	JW1	JW2	JW3	JW4	JW5	JW6	JW7	JW8	JW9	JW10	JW11	JW12
IN	X	X		X			X	X	X	X	X	X
OUT			X		X	X						

RELEASED FOR PRODUCTION BY: ENGINEERING INITIAL: JBB DATE: 3/30/88

RELEASED TO EDC BY: TECHNICAL INFORMATION INITIAL: GZW DATE: 3/31/88

REVISION 1: REDRAWN INITIAL: DATE:

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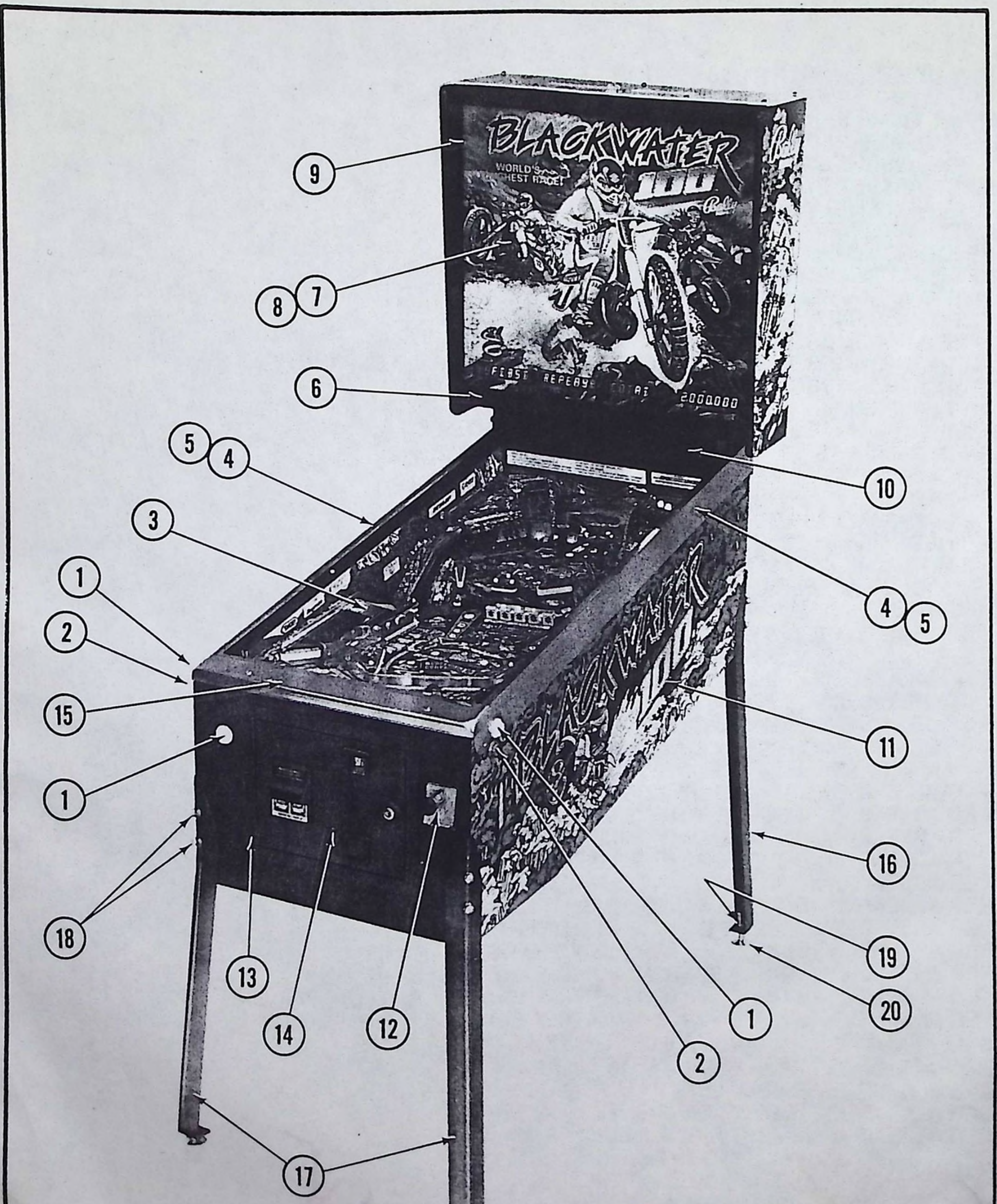
BLACKWATER 100 EXTERNAL GAME PARTS



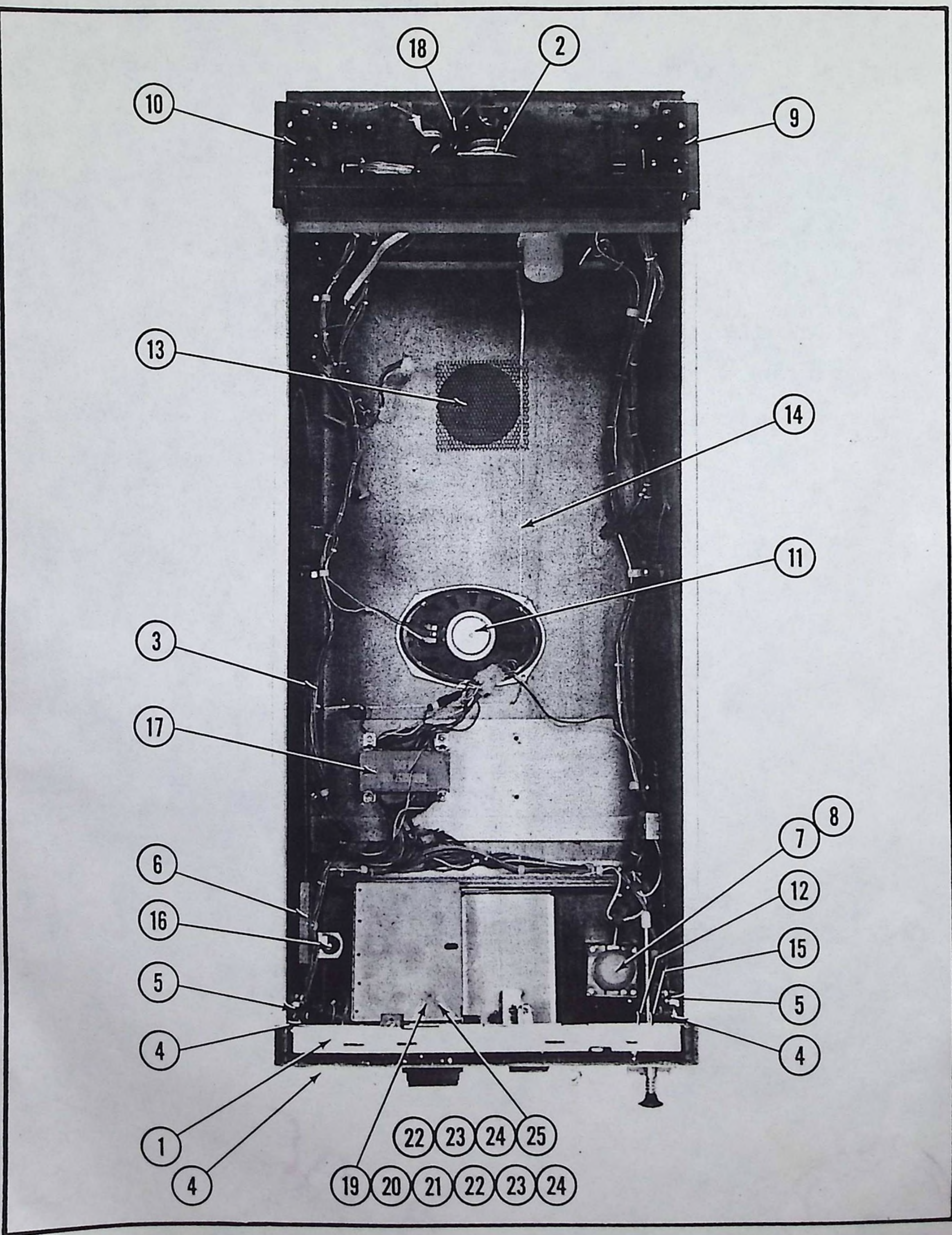
BLACKWATER 100 EXTERNAL GAME PARTS

ITEM	DESCRIPTION	PARTNUMBER	QTY.
1	PUSH-BUTTON: WHITE, ROUND	0017-17042-2105	3
2	PUSH-BUTTON: GREEN, ROUND	0017-17042-2104	2
3	GLASS: PLAYFIELD, CLEAR, TEMPERED	0360-00921-0000	1
4	SIDE MOULDING	0365-04300-0015	2
5	CHANNEL: GLASS 42" (1066.8mm)	0365-17042-5004	2
6	CHANNEL: GLASS LIFT TRANSLITE 26-5/16" (668.3375mm)	0365-00975-0100	1
7	BACK GLASS ASSEMBLY	A365-00H07-0010	1
8	TRANSLITE: BLACKWATER 100	0365-00H07-1014	1
9	CHANNEL: EDGE, TRANSLITE 23-11/16" (601.6625mm)	0365-00976-0100	3
10	GRILLE: PERFORATED	0H06-00127-00XF	1
11	CABINET ASSEMBLY: BLACKWATER 100	A365-00H07-0018	1
12	BALL SHOOTER ASSEMBLY	A365-07250-0013	1
13	DOOR FRAME: DOUBLE, LARGE BLACK	0090-00002-04BK	1
14	COIN DOOR W/VALIDATOR (SHOWN)	A365-09015-0000	1
14	COIN DOOR: U.S.A. .50/.50 (NOT SHOWN)	A365-09000-0000	1
15	FRONT MOLDING ASSEMBLY	A365-00351-0000	1
16	LEG: CABINET REAR	0365-00220-00XF	2
17	LEG: CABINET FRONT	0360-00937-00XF	2
*18	HEX HEAD BOLT: UNSLOTTED 3/8"-16 X 3/8"(9.525mm)	0017-00102-0063	8
*19	HEX NUT: 3/8"-16	0017-00103-0026	4
*20	LEG ADJUSTED (LEVELLER)	0017-00102-0048	4

* ITEM LOCATED IN SPARE PARTS BAG ASSEMBLY.

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

BLACKWATER 100 INTERNAL GAME PARTS



BLACKWATER 100 INTERNAL GAME PARTS

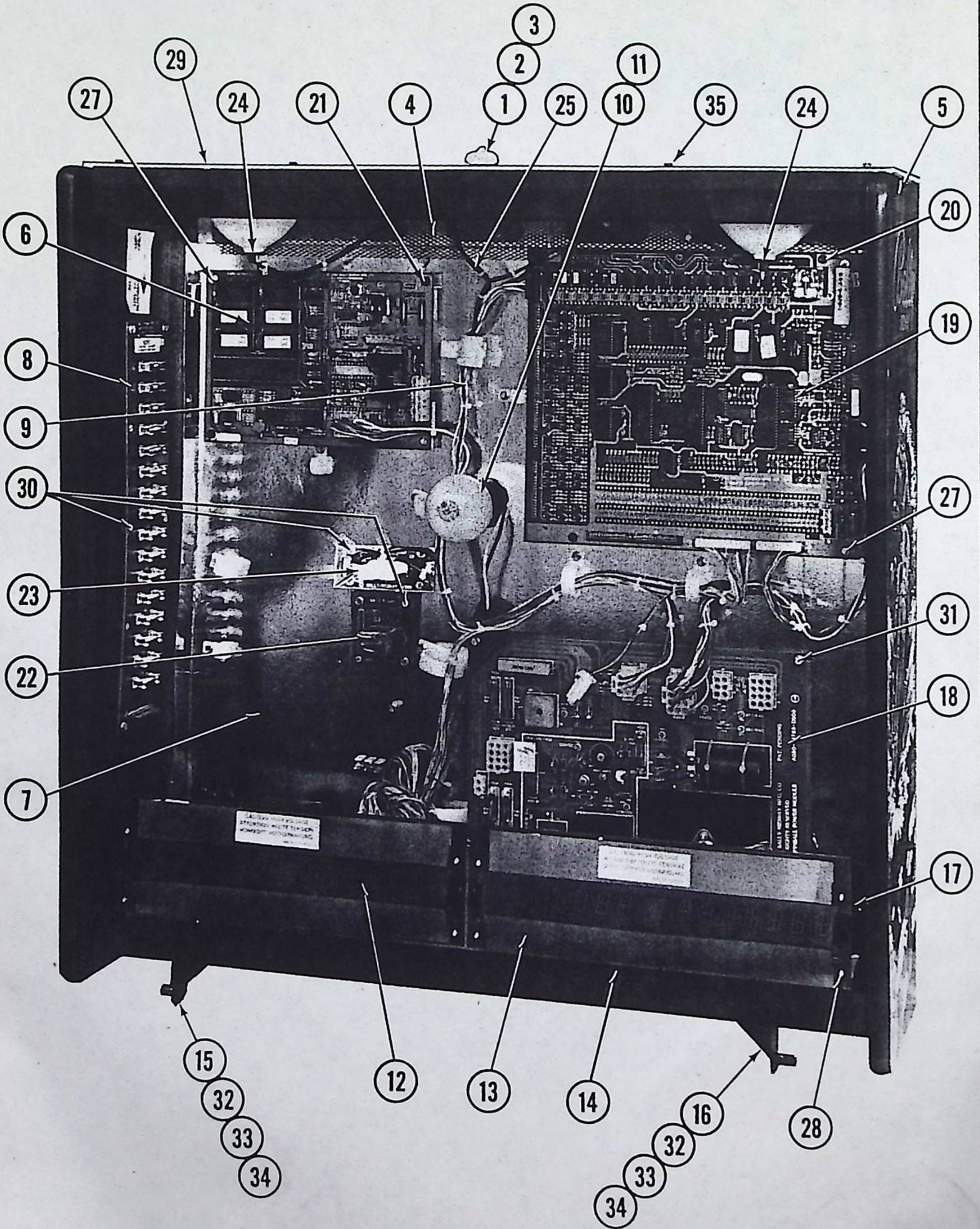
ITEM	DESCRIPTION	PART NUMBER	QTY.
1	FRONT RAIL ASSEMBLY	A365-07250-0011	1
2	SPEAKER: 5¼" ROUND, 4 OHM, 15 WATT	0017-00003-0570	1
3	CABINET CABLE ASSEMBLY	A365-00H07-0007	1
4	SWITCH ASSEMBLY: PUSH-BUTTON	A365-00060-0100	3
5	SWITCH ASSEMBLY W/CAPACITOR: PUSH-BUTTON	A365-00316-0100	2
	CAPACITOR: .01MFD, 500 VOLT, 20%, CERAMIC DISC	0017-097P6-AXPC	2
6	TILT BOARD ASSEMBLY	A365-00370-0000	1
	BRACKET: TILT CONTACT	0360-00168-0000	1
	TILT HANGER	0360-00170-0000	1
	TILT BOARD (WOOD)	0360-00502-0001	1
	WIRE FORM: PLUMB-BOB	0360-00922-00XF	1
	DIODE: 1N4148, 100 VOLT, 500 MA	103E-00002-0005	1
7	HIGH VOLTAGE CABLE W/ ON/OFF SWITCH	A365-00H07-0037	1
	ON/OFF SWITCH & PLATE ASSEMBLY	A945-00062-0000	1
	SWITCH: ON/OFF	0017-00032-0105	1
	WASHER: .516" I.D., 1.25 O.D., .062 TH., NYLON	0017-00104-0111	2
	SPACER: ON/OFF SWITCH	0333-00100-0000	1
	PLATE: SWITCH MOUNTING	0567-00106-0500	1
8	COVER: SWITCH	0017-00042-0370	1
9	MOUNTING BRACKET ASSEMBLY: BACKBOX RIGHT	A365-07250-0001	1
10	MOUNTING BRACKET ASSEMBLY: BACKBOX LEFT	A365-07250-0002	1
11	SPEAKER: 6" X 9", 8 OHM, 10 WATT	0017-00003-0513	1
12	KEY HOOK: DOOR	0017-00007-0019	1
13	GRILLE: VENT, 5-5/8" SQUARE	0017-00009-0490	2
14	GROUND STRAP: L = 23"	0017-00009-0589	1
15	PLATE: BALL SHOOTER	0967-00115-00XF	1
*16	PLUMB-BOB: TILT	0360-00900-0000	1
17	TRANSFORMER: POWER	MT00-00157-A000	1
18	LINE CORD ASSEMBLY	A365-00043-0001	1
	LINE FILTER: 5 AMP, 115 VOLT	0017-00003-0114	1
	LINE CORD: 3 CONDUCTOR, 18 AWG	0017-00003-0500	1
	CONVENIENCE OUTLET	0017-00003-0618	1
	VARISTOR: METAL OXIDE (M.O.V.), 130 VOLT	115E-00001-0001	1
19	CASH BOX: PAPER CURRENCY	0365-04850-0005	1
20	COIN BOX	0365-04850-0003	1
21	COVER: COIN BOX	0365-04850-0002	1
22	CASH BOX: PLASTIC	0950-00903-0000	1
23	HANDLE: CASH BOX, PLASTIC	0950-00113-00XF	1
24	BRACKET: SECURITY CASH BOX	0365-00214-00XF	1
25	COVER: CASH BOX-3 SLOT	0365-04850-0001	1

* ITEM LOCATED IN SPARE PARTS BAG ASSEMBLY.

NOTE: ITEMS 19 THRU 24 ARE USED WITH COIN DOOR W/VALIDATOR PART NUMBER A365-09015-0000. (SHOWN.) ITEMS 22 THRU 25 ARE USED WITH REGULAR U.S.A. COIN DOOR PART NUMBER A365-09000-0000. (NOT SHOWN.)

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

BLACKWATER 100 BACKBOX ASSEMBLY
PART No. A365-00H07-0008



BACKBOX ASSEMBLY
PART NO. A365-00H07-0008

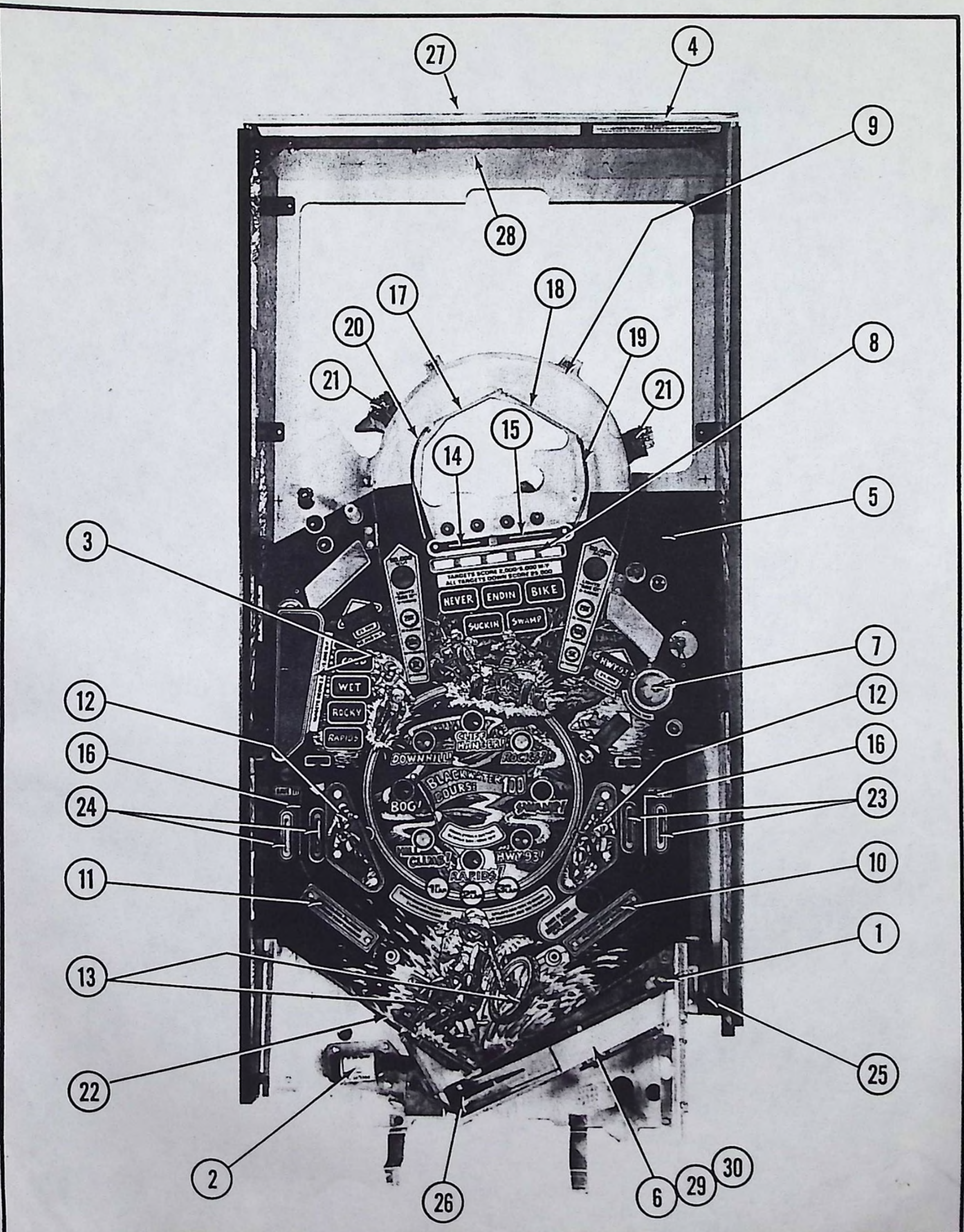
ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CAM: BACK DOOR LOCK	0017-00005-0042	1
2	LOCK: DOOR, 750 SERIES W/2 INDIVIDUAL KEYS	0017-00005-0050	1
	NUT: 3/4"-24 HEX, LOCK RETAINTING	0017-00103-0063	1
	¼'-20 X ¼ (6.35mm) PAN-HEAD SCREW, SLOTTED	0017-00101-0785	1
3	PLATE: LOCK	0017-00005-0209	1
4	GRILLE: VENT	0365-00104-00XF	1
5	BACKBOX: WOOD	0365-00H07-1013	1
6	SOUNDS DELUXE BOARD ASSEMBLY: PROGRAMMED	A084-91864-AH07	1
7	FOIL: BACKBOX FLUORESCENT	0365-00963-0002	1
8	BRITE LIGHTS BOARD W/FUSES	A084-91901-AH07	1
	FUSE: MDQ 3/4" (19.05mm) AMP, 250VAC, SLO-BLO	0017-00003-0638	16
9	DISPLAY CONTROLLER CABLE ASSEMBLY	AH06-00030-0000	1
10	LAMP SOCKET W/MOUNTING BRACKET ASSEMBLY	A365-06700-0001	1
	SOCKET W/CONNECTOR & PINS ASSEMBLY	A365-00309-0000	1
11	LAMP: 34 WATT MISER	0017-00003-0615	1
12	DUAL DISPLAY BOARD	B084-91851-H000	2
13	SHIELD: DISPLAY P.C. BOARD	0365-00967-0000	4
14	GLASS RETAINER	0365-00993-0000	1
15	BRACKET W/PIVOT ASSEMBLY	A365-00383-00XF	1
16	BRACKET W/PIVOT ASSEMBLY	A365-00384-00XF	1
17	BRACKET: DISPLAY BOARD MOUNTING	0365-00219-0000	1
18	6803 POWER MODULE & SPACER ASSEMBLY	A365-00H07-0013	1
	6803 POWER MODULE W/FUSES	A084-91785-AH07	1
	FUSE: GLH, 8AMP, 125VAC, SLO-BLO	0017-00003-0652	1
	SHIELD: POWER SUPPLY	0365-00952-0000	1
	SPACER: HEX	0017-00042-0248	2
	HEX HEAD SCREW: SLOTTED #6-32 X 5/16" (7.9375mm)	0017-00101-0555	2
	SHIELD: POWER MODULE, FISHPAPER	0365-00971-0000	1
19	6803 CONTROL BOARD ASSEMBLY: PROGRAMMED	A084-91786-AH07	1
20	BRACKET: P.C. BOARD SUPPORT	0365-00153-0000	4
21	BRACKET: P.C. BOARD MOUNTING	0365-00142-0000	4
22	AUXILIARY COIL BOARD W/SPACERS ASSEMBLY	A365-00346-0000	1
	SHIELD: AUXILIARY COIL DRIVER BOARD	0365-00989-0000	1
23	RELAY BOARD W/SPACERS ASSEMBLY (NOT SHOWN)	A365-07260-0001	1
	SHIELD: SOLID STATE RELAY BOARD	0365-03050-0001	1
24	SOCKET W/DIODE & TERMINAL/LAMP ASSEMBLY	A365-00332-0000	2
	LAMP: WEDGE-BASE, 12-8V, 1 AMP #912	0017-00003-0525	2
	DIODE: 1N4004, 400 VOLT, 1 AMP	103E-00003-0005	2
25	LAMP BRACKET CABLE ASSEMBLY	A365-07510-0001	1
26	SOLENOID JUMPER CABLE ASSEMBLY	A365-00H07-0043	1
27	SPACER: DUAL LOCK P.C.B., 3/16" (4.7625mm)	0017-00042-0311	4
28	SPACER: DUAL LOCK P.C. B., 3/8" (9.525mm)	0017-00042-0663	8
29	COVER: TOP BACKBOX, ACRYLIC	0365-17042-5002	1
30	SPACER: SELF-RETAINING #8 X ½" (12.7mm)	0017-00042-0328	18
31	SPACER: SELF-RETAINING #8 X ¼" (6.35mm)	0017-00042-0320	5
32	ROUND HEAD SCREW: UNSLOTTED #10-32 X 1¼" (31.75mm)	0017-00101-0701	4
33	HEX NUT W/SEMS #10-32	0017-00103-0081	4
34	WASHER: FLAT #10	0017-00104-0025	4
35	PAN HEAD TAMPER PROOF-SCREW #8 X 5/8" (15.875mm)	0017-00101-0138	9

BACKBOX SAFETY WARNING

****
WARNING
****

TO AVOID INJURY TO OWNER/SERVICE PERSONNEL AND TO PREVENT DAMAGE TO THE MACHINE, THE BACK BOX MUST BE SECURED WITH THE BOLTS PROVIDED BEFORE THE MACHINE IS TRANSPORTED OR ACTIVATED.

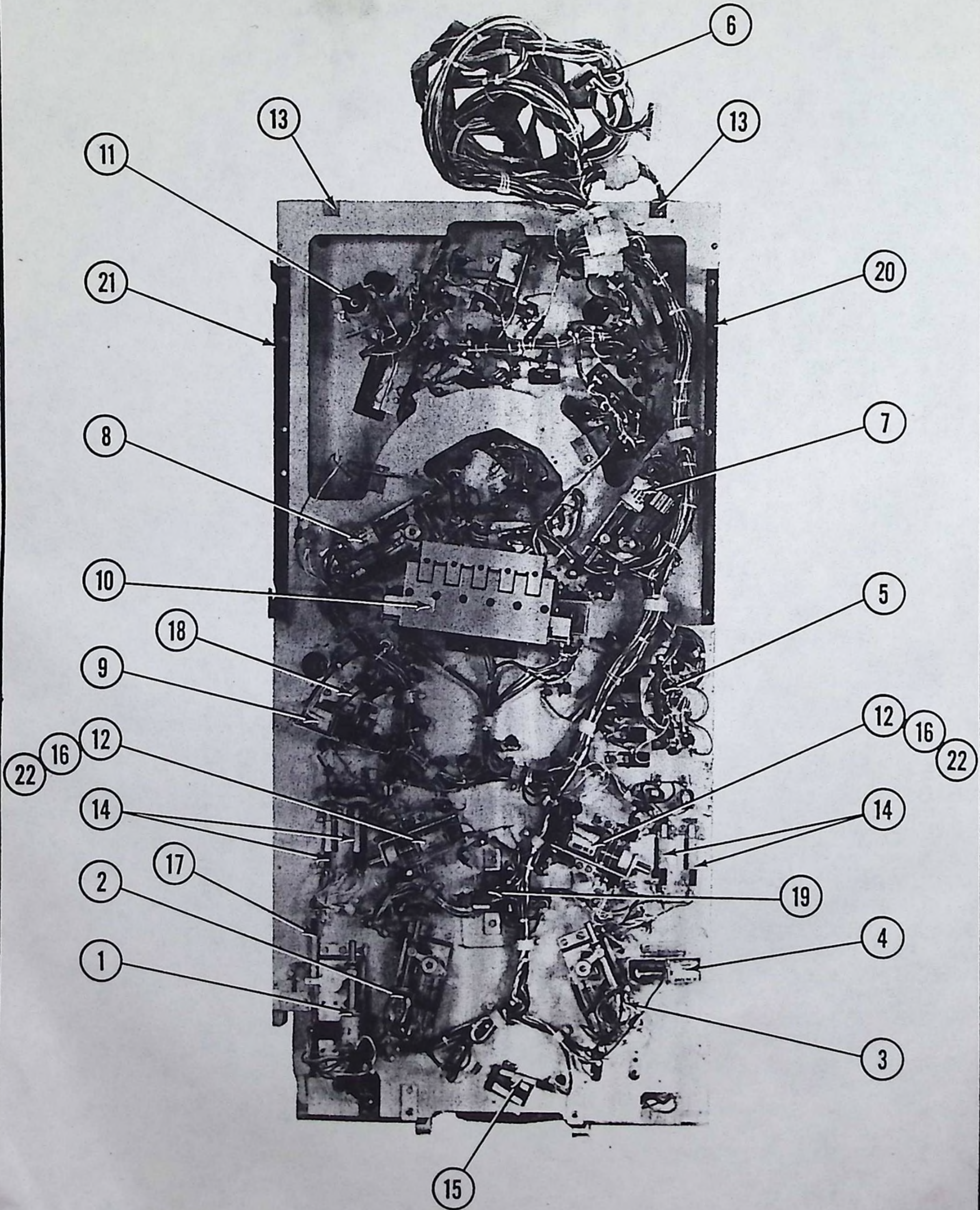
BLACKWATER 100 PLAYFIELD ASSEMBLY -TOP



BLACKWATER 100 PLAYFIELD ASSEMBLY - TOP

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	MULTI-BALL KICKER ASSEMBLY	AH01-00028-00XF	1
2	TOP MOUNTED BALL RETURN KICKER ASSEMBLY	A360-00234-0000	1
3	BLUE TARGET ASSEMBLY	A365-R0306-F112	1
	BLUE TARGET W/SWITCH ASSEMBLY	A365-R0300-0002	4
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	4
4	BACKBOARD ASSEMBLY	A365-00H07-0009	1
5	PLAYFIELD W/INSERTS ASSEMBLY	A365-00H07-0019	1
6	MULTI-BALL TROUGH ASSEMBLY	A365-00347-0000	1
7	SAUCER ASSEMBLY: EJECT LEFT	A365-05320-0002	1
8	DROP TARGET ASSEMBLY: 5 UNIT SIDE-BY-SIDE	A365-05550-0001	1
9	SCOOP ASSEMBLY	A365-06400-0001	1
10	BALL GUIDE ASSEMBLY: RIGHT FLIPPER	A365-07300-0003	1
11	BALL GUIDE ASSEMBLY: LEFT FLIPPER	A365-07300-0004	1
12	SLINGSHOT KICKER ASSEMBLY	A967-00059-0000	2
13	BALL GUIDE WIRE FORM: 2-3/8" (60.3MM)	0360-00175-5300	2
14	BALL GUIDE WIRE FORM: 1-3/8" (34.9MM)	0365-00151-1375	1
15	BALL GUIDE WIRE FORM: 1-7/8" (47.6MM)	0365-00151-1875	1
16	BALL GUIDE WIRE FORM: 2-5/8" (66.6MM)	0365-00151-2625	2
17	BALL GUIDE WIRE FORM: 3-1/4" (82.5MM)	0365-00151-3250	1
18	BALL GUIDE WIRE FORM: 3-3/4" (95.2MM)	0365-00151-3750	1
19	BALL GUIDE WIRE FORM	0365-03700-0001	1
20	BALL GUIDE WIRE FORM	0365-03700-0002	1
21	MICRO SWITCH W/BRACKET ASSEMBLY	A365-06900-0013	2
	MICRO SWITCH & WIRE FORM	A365-06800-0002	2
	SWITCH: LOW TORQUE W/PUSH-NUT	0017-00005-0195	2
	MICRO SWITCH WIRE FORM	0365-00970-0007	2
	DIODE: 1N4148, 100 VOLT, 500MA 1	03E-00002-0005	2
	SWITCH BRACKET	0365-02800-0003	2
22	BOTTOM ARCH EXTENSION	0365-04500-0001	1
23	WIRE FORM W/BRACKET ASSEMBLY	A365-06310-0004	2
	WIRE FORM: ROLLOVER RIGHT	0360-00930-0000	2
	BRACKET: ROLLOVER RIGHT	0365-02400-0003	2
24	WIRE FORM W/BRACKET ASSEMBLY	A365-06320-0004	2
	WIRE FORM: ROLLOVER LEFT	0360-00929-0200	2
	BRACKET: ROLLOVER LEFT	0365-02400-0002	2
25	WIRE FORM W/BRACKET ASSEMBLY	A365-06320-0003	1
	WIRE FORM: ROLLOVER LEFT	0365-02450-0003	1
	BRACKET: ROLLOVER LEFT	0365-02400-0002	1
26	WIRE FORM W/BRACKET ASSEMBLY	A365-06320-0005	1
	WIRE FORM: BALL RETURN LEFT	0365-02450-0008	1
	BRACKET: ROLLOVER LEFT	0365-02400-0002	1
27	SWITCH ASSEMBLY: ROLLOVER W/DIODE & CAP.	A020-00095-0311	1
	SWITCH ASSEMBLY	A020-00095-0300	1
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	1
	CAPACITOR: .05MF, 25 VOLT, 20%	0171-122E6-AXGF	1
28	WIRE FORM W/BRACKET ASSEMBLY	A365-06310-0002	1
	WIRE FORM: ROLLOVER	0360-02450-0002	1
	BRACKET: ROLLOVER RIGHT	0365-02400-0001	1
29	4 POSITION DETECTOR BOARD ASSEMBLY	B084-91894-B000	1
30	4 POSITION EMITTER BOARD ASSEMBLY	B084-91895-B000	1

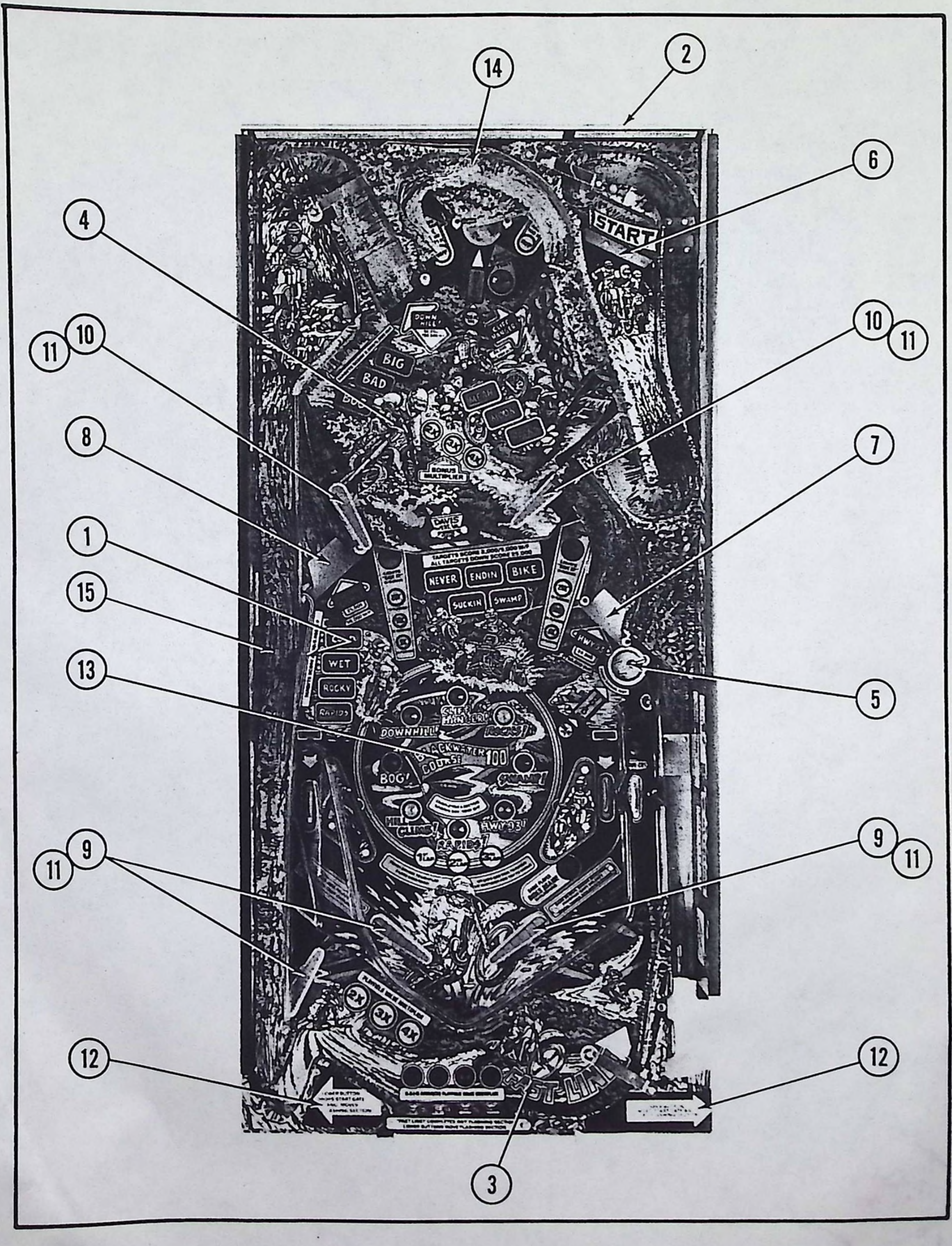
BLACKWATER 100 PLAYFIELD ASSEMBLY - BOTTOM



BLACKWATER 100 PLAYFIELD ASSEMBLY - BOTTOM

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	MULTI-BALL KICKER ASSEMBLY	AH01-00027-0000	1
2	FLIPPER ASSEMBLY: DOUBLE SWITCH RIGHT	AC70-00023-0100	1
3	FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT	AC70-00023-0200	1
4	KNOCKER ASSEMBLY	A360-00235-0000	1
5	BLUE TARGET ASSEMBLY	A365-R0306-F112	1
6	PLAYFIELD CABLE ASSEMBLY	A365-00H07-0005	1
7	FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT	A365-05020-0001	1
8	FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT	A365-05030-0001	1
9	SAUCER ASSEMBLY: EJECT LEFT	A365-05320-0002	1
10	DROP TARGET ASSEMBLY: 5 UNIT SIDE-BY-SIDE	A365-05550-0001	1
11	BALL STOP ASSEMBLY: START GATE	A365-07550-0001	1
12	SLINGSHOT KICKER ASSEMBLY	A967-00059-0000	2
13	BACK PANEL BRACKET	0365-00172-0001	2
14	SWITCH ASSEMBLY: ROLLOVER W/DIODE	A020-00095-0301	4
	SWITCH ASSEMBLY: ROLLOVER	A020-00095-0300	4
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	4
15	SWITCH ASSEMBLY: OUTHOLE	A020-00095-0401	1
	SWITCH ASSEMBLY:	A020-00095-0400	1
	DIODE: 1N4148, 100 VOLT, 500 MA	103E-00002-0005	1
16	SWITCH ASSEMBLY: SLINGSHOT	A360-00230-0000	2
	SWITCH ASSEMBLY	A360-00069-0000	2
	SWITCH BRACKET	0360-00103-00XF	2
17	SWITCH ASSEMBLY: ROLLOVER W/DIODE & CAP.	A020-00095-0311	1
	SWITCH ASSEMBLY: ROLLOVER	A020-00095-0300	1
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	1
	CAPACITOR: .05MF, 25 VOLT, 20%	0171-122E6-AXGF	1
18	SWITCH ASSEMBLY: EJECT W/DIODE	A020-00095-0601	1
	SWITCH ASSEMBLY	A020-00095-0600	1
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	1
19	PLAYFIELD SUPPORT BRACKET	0H05-00156-00XF	1
20	PLAYFIELD GUIDE: RIGHT	0H05-00149-01XF	1
21	PLAYFIELD GUIDE: LEFT	0H05-00149-02XF	1
22	SWITCH W/BRACKET & DIODE ASSEMBLY: SLINGSHOT	A360-00239-0000	2
	SWITCH ASSEMBLY	A360-00069-0000	2
	SWITCH BRACKET	0360-00103-00XF	2
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	2

BLACKWATER 100 PLAYFIELD WITH RAMPS

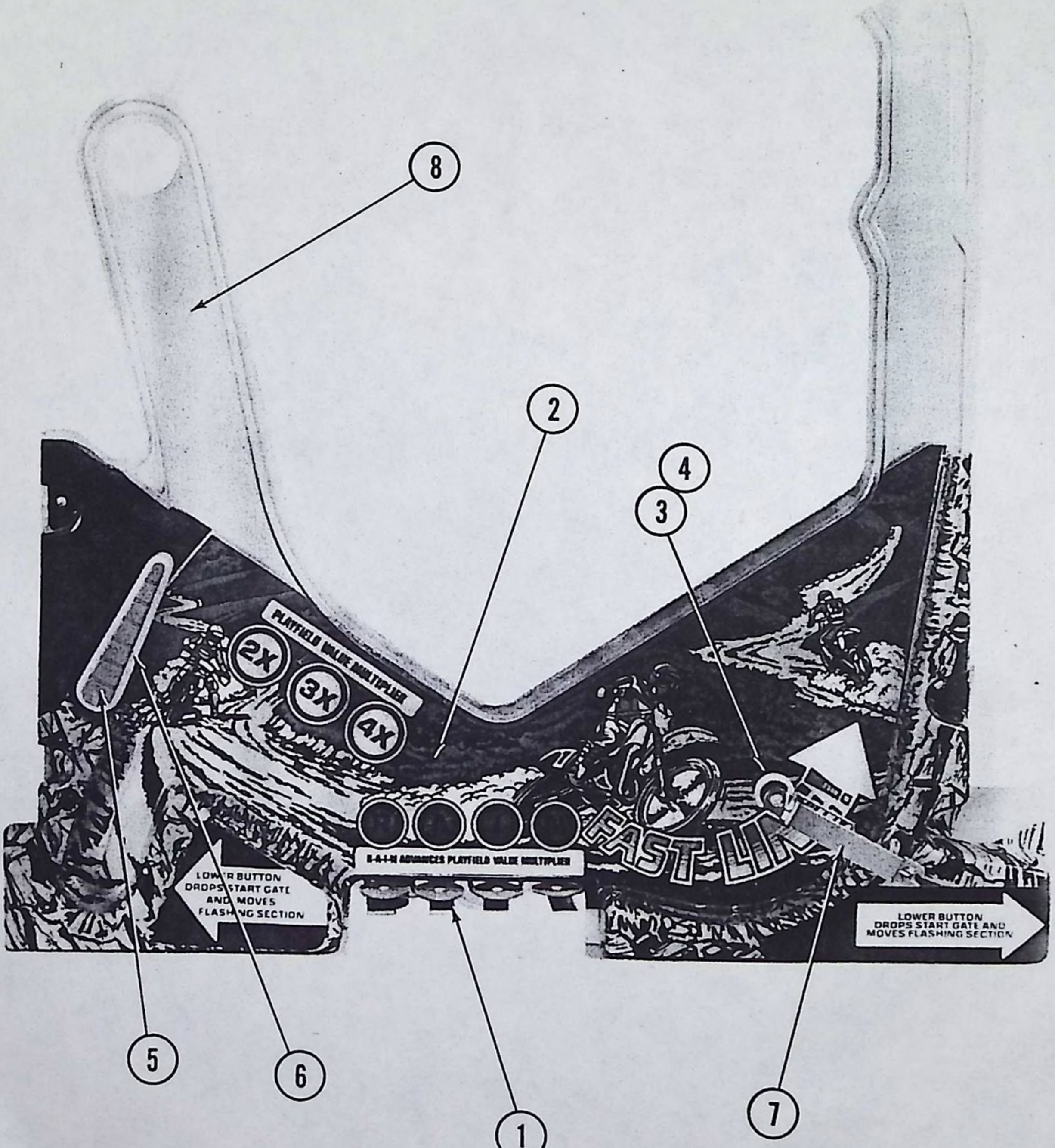


11-12

BLACKWATER 100 PLAYFIELD W/RAMPS

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	BLUE TARGET ASSEMBLY	A365-R0306-F112	1
	BLUE TARGET W/SWITCH ASSEMBLY	A365-R0300-0002	4
	DIODE; 1N4148, 100 VOLT, 500MA	103E-00002-0005	4
2	BACKBOARD ASSEMBLY	A365-00H07-0009	1
3	FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY	A365-00H07-0021	1
4	REAR PLATFORM ASSEMBLY	A365-00H07-0022	1
5	SAUCER ASSEMBLY: EJECT LEFT	A365-05320-0002	1
6	BALL STOP GATE 'L' BRACKET	0365-02700-0026	1
7	RAMP ENTRANCE PLATE: RIGHT	0365-04600-0003	1
8	RAMP ENTRANCE PLATE: LEFT	0365-04600-0004	1
9	FLIPPER W/SHAFT: BLUE	0365-04800-0002	3
10	FLIPPER W/SHAFT: BLUE	0365-04800-0012	2
11	FLIPPER RUBBER: YELLOW	0017-00041-0653	5
12	BLACKWATER 100 DECALS	0365-00H07-1025	1
13	PLAYFIELD MYLAR	0365-00H07-1009	1
14	UPPER NETWORK ASSEMBLY	A365-00H07-0040	1
15	LEFT SIDE BALL RUNWAY VACUUM FORM	0365-00H07-1017	1

FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY TOP
PART NO. A365-00H07-0021

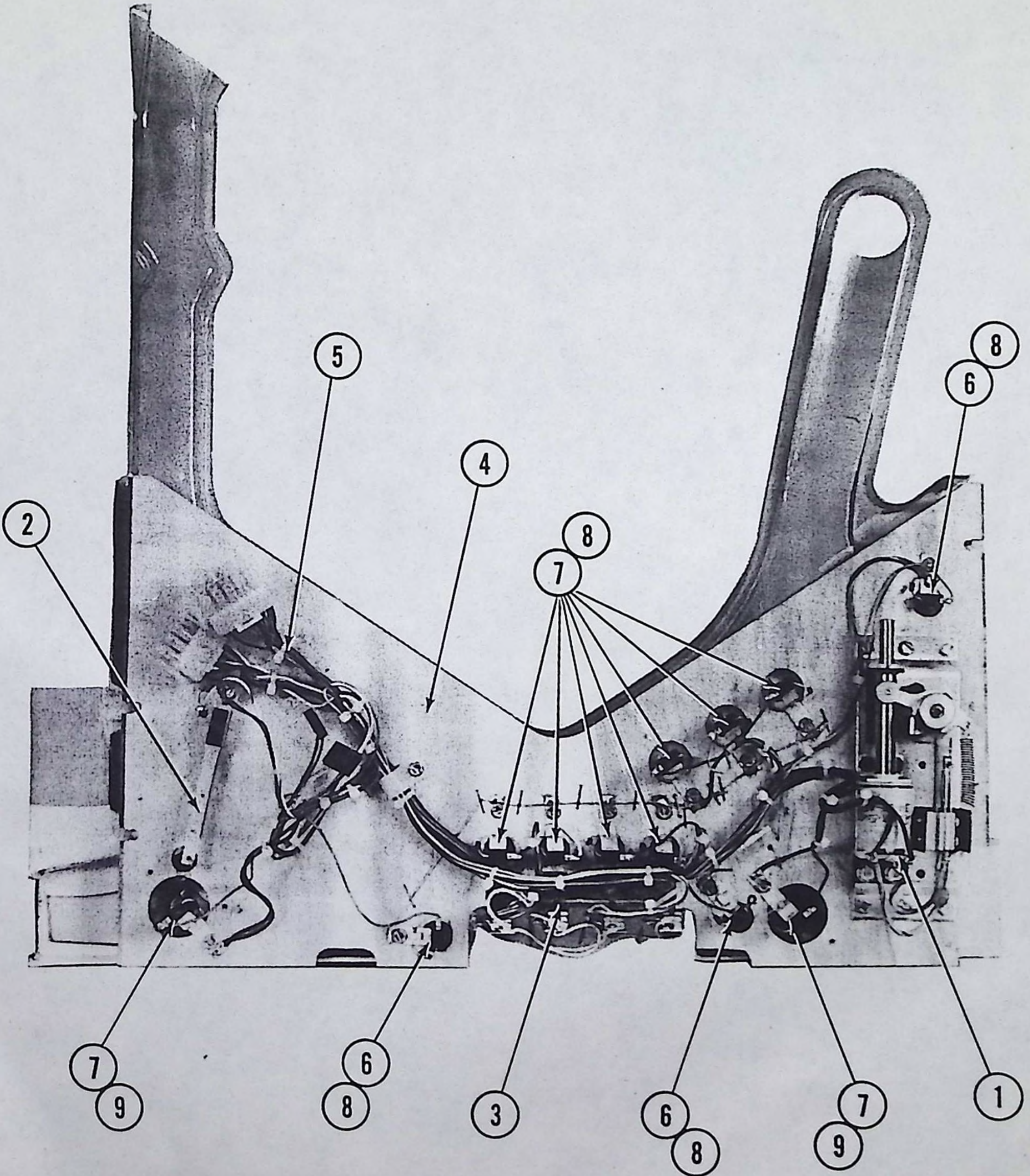

8
2
4
3
PLAYFIELD VALUE MULTIPLIER
2X
3X
4X
R-A-I-N ADVANCES PLAYFIELD VALUE MULTIPLIER
FAST-LIN
LOWER BUTTON DROPS START GATE AND MOVES FLASHING SECTION
LOWER BUTTON DROPS START GATE AND MOVES FLASHING SECTION
5
6
1
7

FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY (TOP)
PART NO. A365-00H07-0021

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	TARGET W/SWITCH, BRACKET, DIODE & CAPACITOR: BLUE	A365-R0306-F112	1
	TARGET W/SWITCH ASSEMBLY: BLUE	A365-R0300-0002	4
	DIODE: 1N4148 100 VOLT 500 MA	103E-00002-0005	4
	CAPACITOR: .05MF 25 VOLT 20%	0171-122E6-AXGF	4
2	FRONT PLATFORM W/INSERTS ASSEMBLY	A365-00H07-0023	1
3	POST: GREEN, L= 1.020" (25.908mm)	0017-00042-0712	1
4	BUMPER POST: WHITE RUBBER	0017-00041-0637	1
5	FLIPPER W/SHAFT: BLUE	0365-04800-0002	1
6	FLIPPER RUBBER: YELLOW	0017-00041-0653	1
7	BRACKET W/WIRE FORM ASSEMBLY	A365-06100-0017	1
	GATE BRACKET	0365-02100-0003	1
	GATE SCORING WIRE FORM	0365-02150-0027	1
	SWITCH ACTUATOR WIRE FORM	0365-02160-0001	1
	NYLON BUSHING	0365-17042-5003	1
8	FRONT PLATFORM VACUUM FORM	0365-00H07-1015	1

FRONT PLATFORM (BOTTOM ARCH) ASSEMBLY BOTTOM

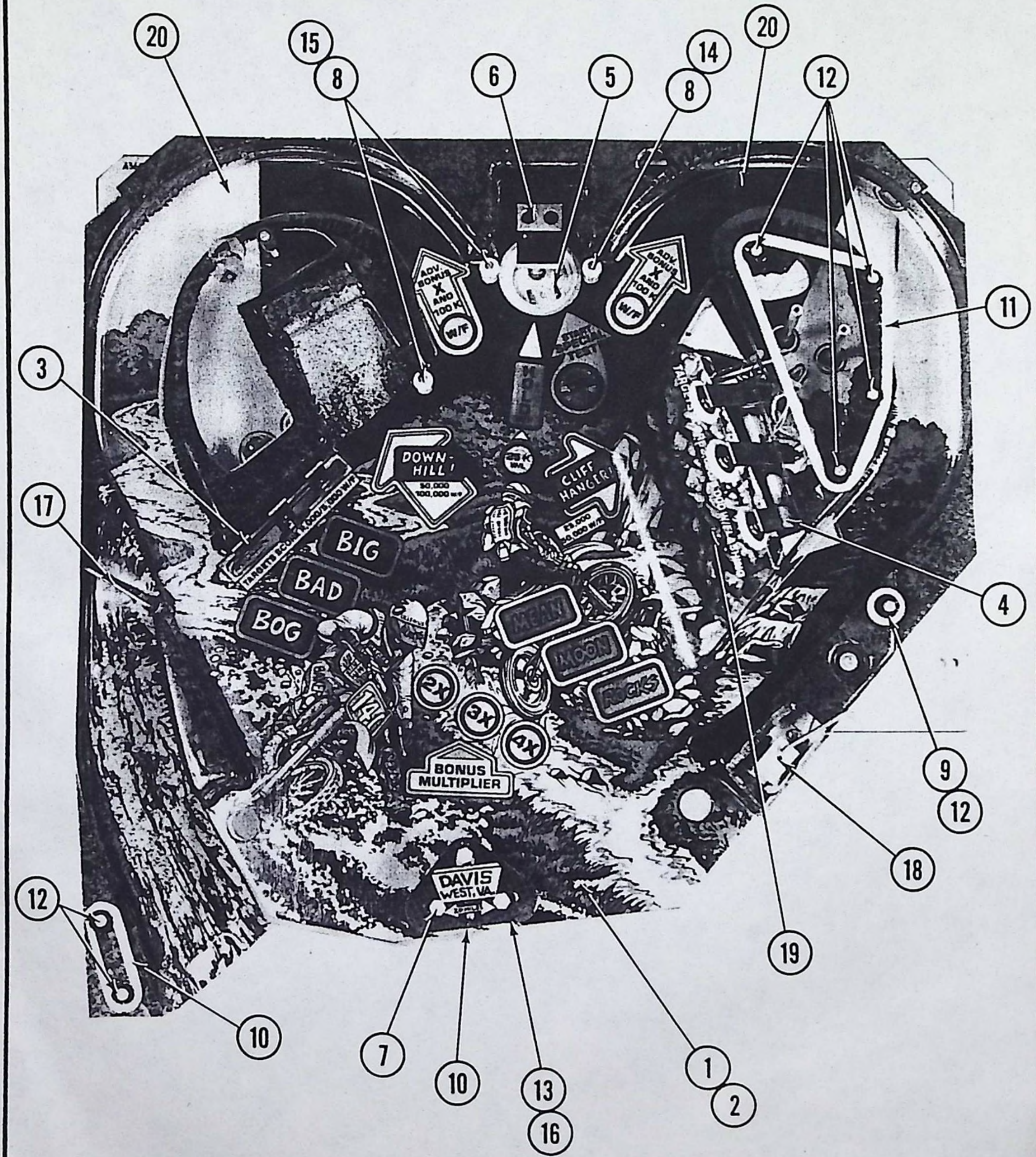
PART NO. A365-00H07-0021



FRONT PLATFORM (BOTTOM ARC) ASSEMBLY (BOTTOM)
PART NO. A365-00H07-0021

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT	A365-05030-0002	1
2	GATE SWITCH ASSEMBLY	A020-00094-0211	1
	SPINNER GATE SWITCH ASSEMBLY	A020-00094-0200	1
	CAPACITOR: .05MFD, 25 VOLT, 20% CERAMIC DISC	0171-122E6-AXGF	1
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	1
3	TARGET W/SWITCH, BRACKET, DIODE & CAPACITOR: BLUE	A365-R0306-F112	1
4	FRONT PLATFORM W/INSERTS ASSEMBLY	A365-00H07-0023	1
5	FRONT PLATFORM CABLE ASSEMBLY	A365-00H07-0030	1
6	SOCKET W/DIODE ASSEMBLY	A365-00077-0200	3
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00003-0005	3
7	SOCKET W/DIODE ASSEMBLY	A365-00077-0300	9
	DIODE: IN4004GP, 400 VOLT, 1 AMP	103E-00003-0005	9
8	WEDGE BASE LAMP #555: 6.3 VOLT, .25 AMP	0017-00003-0501	10
9	WEDGE BASE LAMP #912: 12.8 VOLT, 1.0 AMP	0017-00003-0525	2

REAR PLATFORM ASSEMBLY TOP
PART NO. A365-00H07-0022



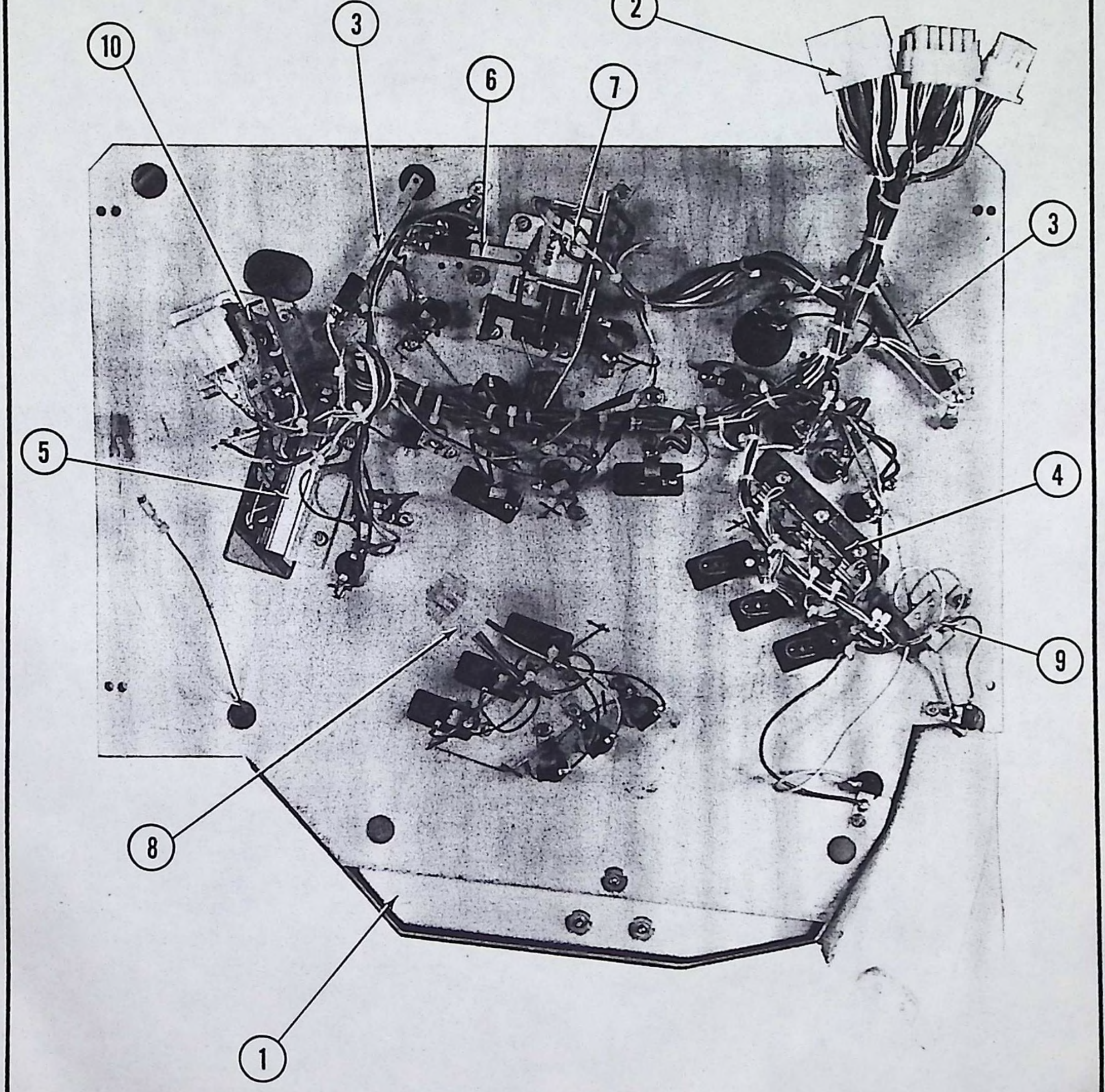
REAR PLATFORM ASSEMBLY (TOP)
PART NO. A365-00H07-0022

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	REAR PLATFORM W/INSERTS ASSEMBLY	A365-00H07-0025	1
2	REAR LOWER NETWORK RAMP	0365-00H07-1020	1
3	TARGET ASSEMBLY W/SWITCH, BRACKET, DIODE & CAPACITOR: GREEN	A365-R0307-F114	1
	TARGET W/SWITCH ASSEMBLY: GREEN	A365-R0300-0004	3
	DIODE: 1N4148 100VOLT 500MA	103E-00002-0005	3
	CAPACITOR: .05MF 25VOLT 20%	0171-122E6-AXGF	3
4	TARGET ASSEMBLY W/SWITCH, BRACKET, DIODE & CAPACITOR: YELLOW	A365-00H07-0035	1
	TARGET W/SWITCH ASSEMBLY: YELLOW	A365-R0300-0003	3
	DIODE: 1N4148 100VOLT 500MA	103E-00002-0005	3
	CAPACITOR: .05MF 25VOLT 20%	0171-122E6-AXGF	3
5	SAUCER ASSEMBLY	A365-05310-0002	1
6	SAUCER BALL STOP BRACKET	0365-03000-0009	1
7	NYLON ACORN NUT #5	0017-00009-0302	3
8	BUMPER POST: WHITE RUBBER	0017-00041-0633	3
9	BUMPER: WHITE RUBBER .23" I.D. (5.842mm)	0017-00041-0641	1
10	BUMPER: WHITE RUBBER 1.5" I.D. (38.1mm)	0017-00041-0644	2
11	BUMPER: WHITE RUBBER 3.5" I.D. (88.9mm)	0017-00041-0648	1
12	POST: GREEN L = 1.020" (25.908mm)	0017-00042-0712	7
13	POST: GREEN L = 1.205" (30.607mm)	0017-00042-0714	3
14	BUMPER POST: #10 x 7/16" (11.1125mm)	0360-00732-00XF	1
15	BUMPER POST: #10-32 X 7/16" (11.1125mm)	0365-00700-00XF	2
16	HEX STUD #6-20 X 1-11/16" (42.8625mm)	0365-04400-0003	3
17	GATE ASSEMBLY W/BRACKET & WIRE FORM	A365-06100-0016	1
	GATE BRACKET	0365-02100-0011	1
	GATE WIRE FORM	0365-02150-0026	1
	NYLON BUSHING	0365-17042-5003	1
	SWITCH ACTUATOR WIRE FORM	0365-02160-0003	1
18	VERTICAL GATE SWITCH ACTUATOR WIRE FORM	0365-02150-0012	1
19	MEAN MOON ROCK SCENERY	0365-00H07-1028	1
20	GATE ASSEMBLY W/BRACKET AND WIRE FORM	A365-06100-0009	2
	GATE BRACKET	0365-02100-0003	2
	GATE WIRE FORM	0365-02150-0011	2
	NYLON BUSHING	0365-17042-5003	2
	SWITCH ACTUATOR WIRE FORM	0365-02160-0001	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

REAR PLATFORM ASSEMBLY BOTTOM

PART No. A365-00H07-0022

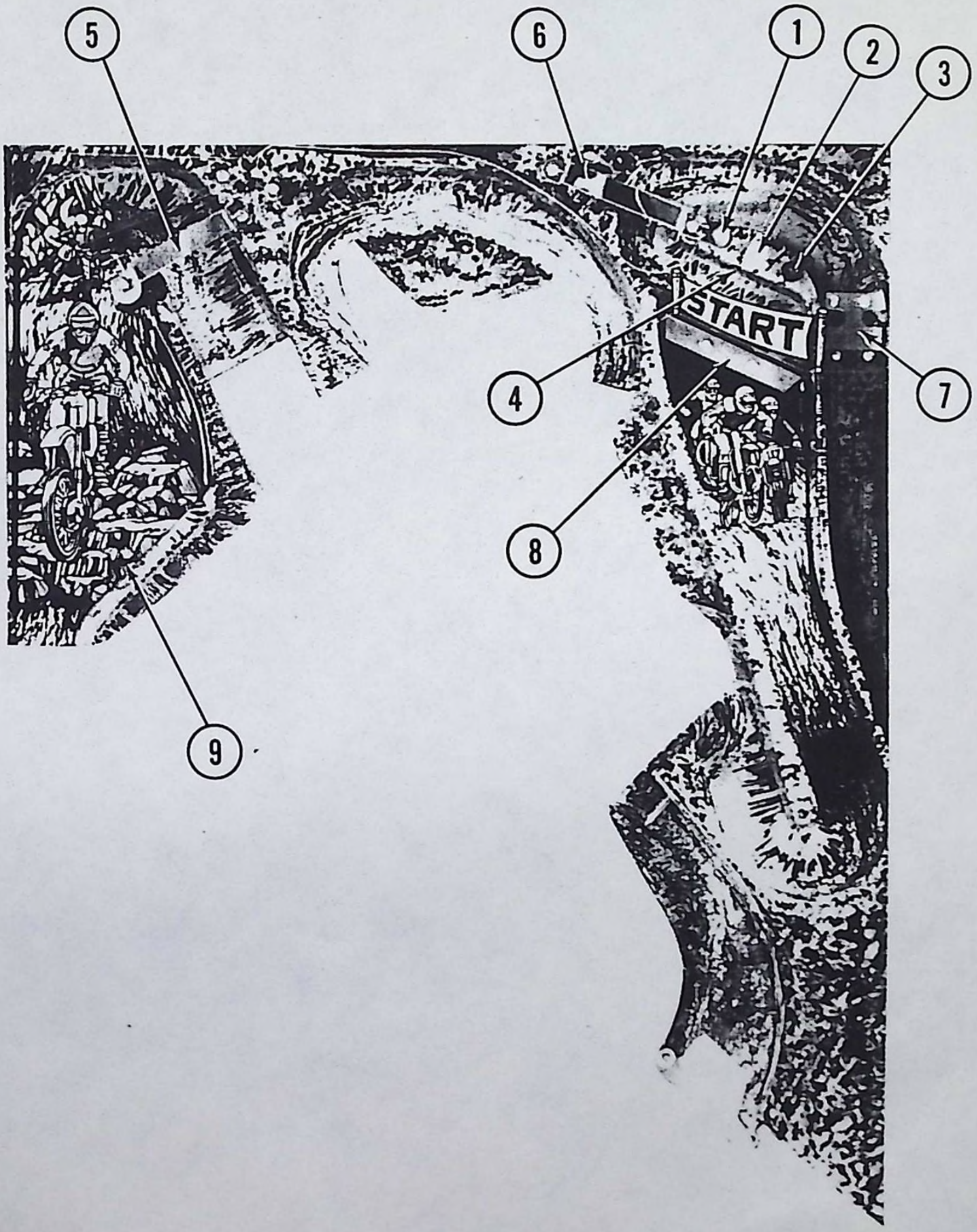


REAR PLATFORM ASSEMBLY (BOTTOM)
PART NO. A365-00H07-0022

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	REAR PLATFORM W/INSERTS ASSEMBLY	A365-00H07-0025	1
2	REAR PLATFORM CABLE ASSEMBLY	A365-00H07-0031	1
3	GATE SWITCH ASSEMBLY	A020-00094-0211	4
4	TARGET ASSEMBLY W/SWITCH, BRACKET, DIODE & CAPACITOR: GREEN	A365-R0307-F114	1
5	TARGET ASSEMBLY W/SWITCH, BRACKET, DIODE & CAPACITOR: YELLOW	A365-00H07-0035	1
6	SWITCH W/DIODE & PLATE ASSEMBLY	A020-00095-0601	1
	SWITCH W/DIODE ASSEMBLY	A020-00095-0600	1
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	1
	SWITCH PLATE	0020-00202-0000	1
	PHILLIPS ROUND HEAD SCREW #5 X 7/8" (22.225mm)	0017-00101-0394	2
7	SAUCER ASSEMBLY	A365-05310-0002	1
8	REAR PLATFORM LIGHT JUMPER CABLE	A365-00H07-0034	1
9	TOP MOUNTING SWITCH W/BRACKET ASSEMBLY	A365-06900-0006	1
	SWITCH: SUB MINI SNAP ACTION	0365-17032-0003	1
	BRACKET: VERTICAL GATE TOP MOUNTING	0365-02100-0006	1
10	STARTING GATE BALL STOP ASSEMBLY	A365-07550-0001	1

UPPER NETWORK ASSEMBLY

PART No. A365-00H07-0040

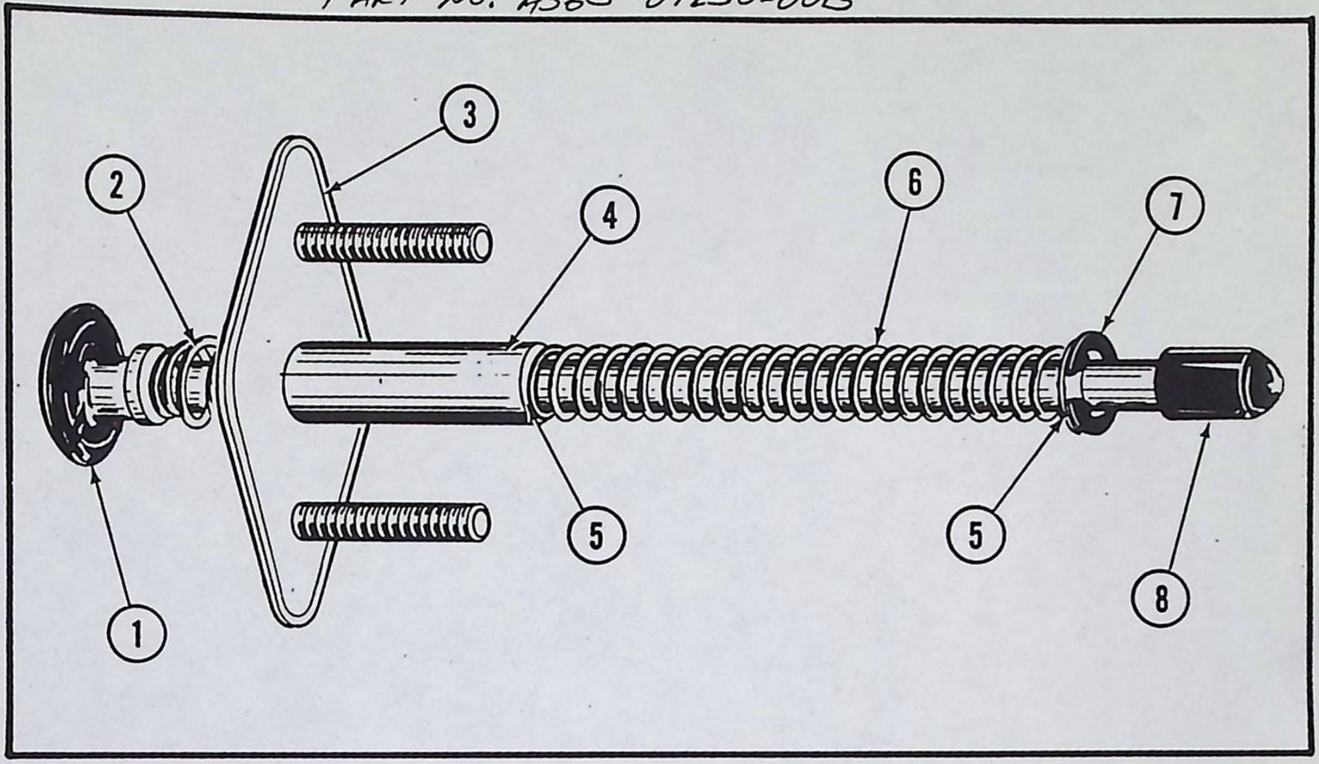


UPPER NETWORK ASSEMBLY
PART NO. A365-00H07-0040

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	LAMP FILTER: RED, RUBBER	0365-17041-0001	1
2	LAMP FILTER: YELLOW, RUBBER	0365-17041-0003	1
3	LAMP FILTER: GREEN, RUBBER	0365-17041-0004	1
4	START LIGHTS CABLE ASSEMBLY	A365-00H07-0036	1
5	GATE BRACKET W/WIRE FORM ASSEMBLY	A365-06100-0003	1
	GATE BRACKET	0365-02100-0003	1
	1 WAY GATE WIRE FORM	0365-02150-0003	1
	SWITCH ACTUATOR WIRE FORM	0365-02160-0002	1
	NYLON SPINNER BUSHING	0365-17042-5003	1
6	GATE BRACKET W/WIRE FORM ASSEMBLY	A365-06100-0004	1
	GATE BRACKET	0365-02100-0002	1
	1 WAY GATE WIRE FORM	0365-02150-0001	1
	SWITCH ACTUATOR WIRE FORM	0365-02160-0002	1
	NYLON SPINNER BUSHING	0365-17042-5003	1
7	RAMP ENTRANCE PLATE	0365-00H07-1024	1
8	BALL STOP GATE 'L' BRACKET	0365-02700-0026	1
	PHILLIPS PAN HEAD SCREW #6-32 X ½" (12.7mm)	0017-00101-0347	2
9	UPPER RAMP BRACKET & NUTS ASSEMBLY	A365-00H07-0041	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

BALL SHOOTER ASSEMBLY
PART NO. A365-07250-0013



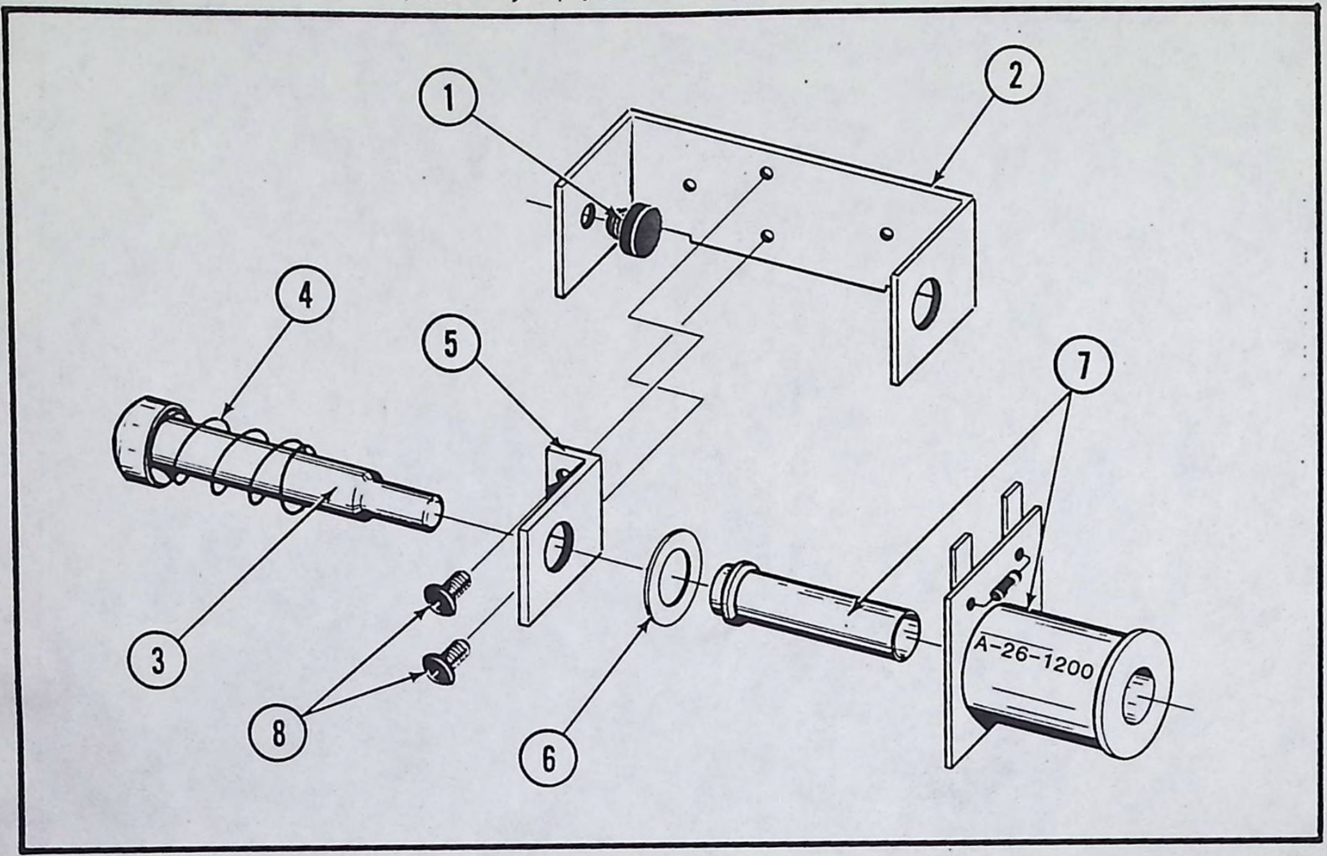
BALL SHOOTER ASSEMBLY
PART NO. A365-07250-0013

ITEM	DESCRIPTION	PART NO.	QTY
1	BALL SHOOTER ROD ASSEMBLY: MOLDED	0365-04300-0009	1
2	SPRING: COMPRESSION	0010-00271-0000	1
3	SHOOTER GUIDE COVER WELD ASSEMBLY	A360-00040-00XF	1
4	GUIDE: BALL SHOOTER	0017-00042-0347	1
5	WASHER: FLAT .395" I.D., .500" O.D. & .032" TH.	0017-00104-0076	3
6	SPRING: COMPRESSION	0010-00274-0136	1
7	E-RING: .375" DIA.	0017-00100-0037	1
8	SHOOTER-TIP: ROUND, RUBBER	0017-00041-0631	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

KNOCKER ASSEMBLY

PART No. A360-00235-0000



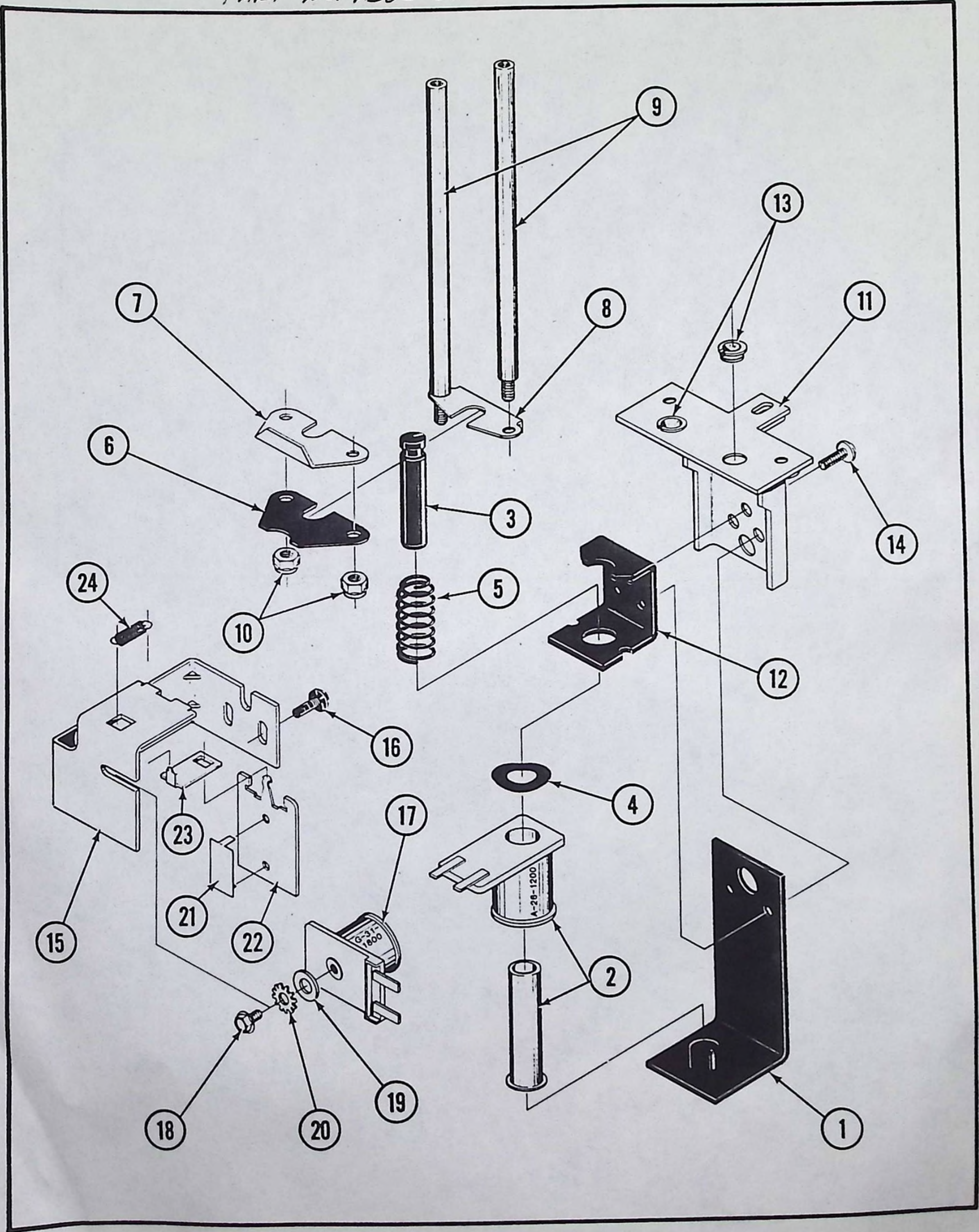
KNOCKER ASSEMBLY
PART NO. A360-00235-0000

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	BUMPER PLUG: BLACK	0017-00041-0635	1
2	COIL FRAME	0360-00909-00XF	1
3	PLUNGER & STRIKER ASSEMBLY	A360-00011-00XF	1
4	COMPRESSION SPRING	c010-00274-0212	1
5	COIL BRACKET	0360-00318-00XF	1
6	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
7	COIL & TUBING ASSEMBLY	A360-00046-0000	1
	COIL: 2 LUG	A365-00067-0006	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: L = 1.844" X 5/8" (46.8376mm X 15.875mm)	0017-00041-0611	1
8	PHILLIPS PAN HEAD SCREW #8-32 X ¼" (6/35mm)	0017-00101-0161	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

BALL STOP ASSEMBLY (START GATE)

PART No. A365-07550-0001

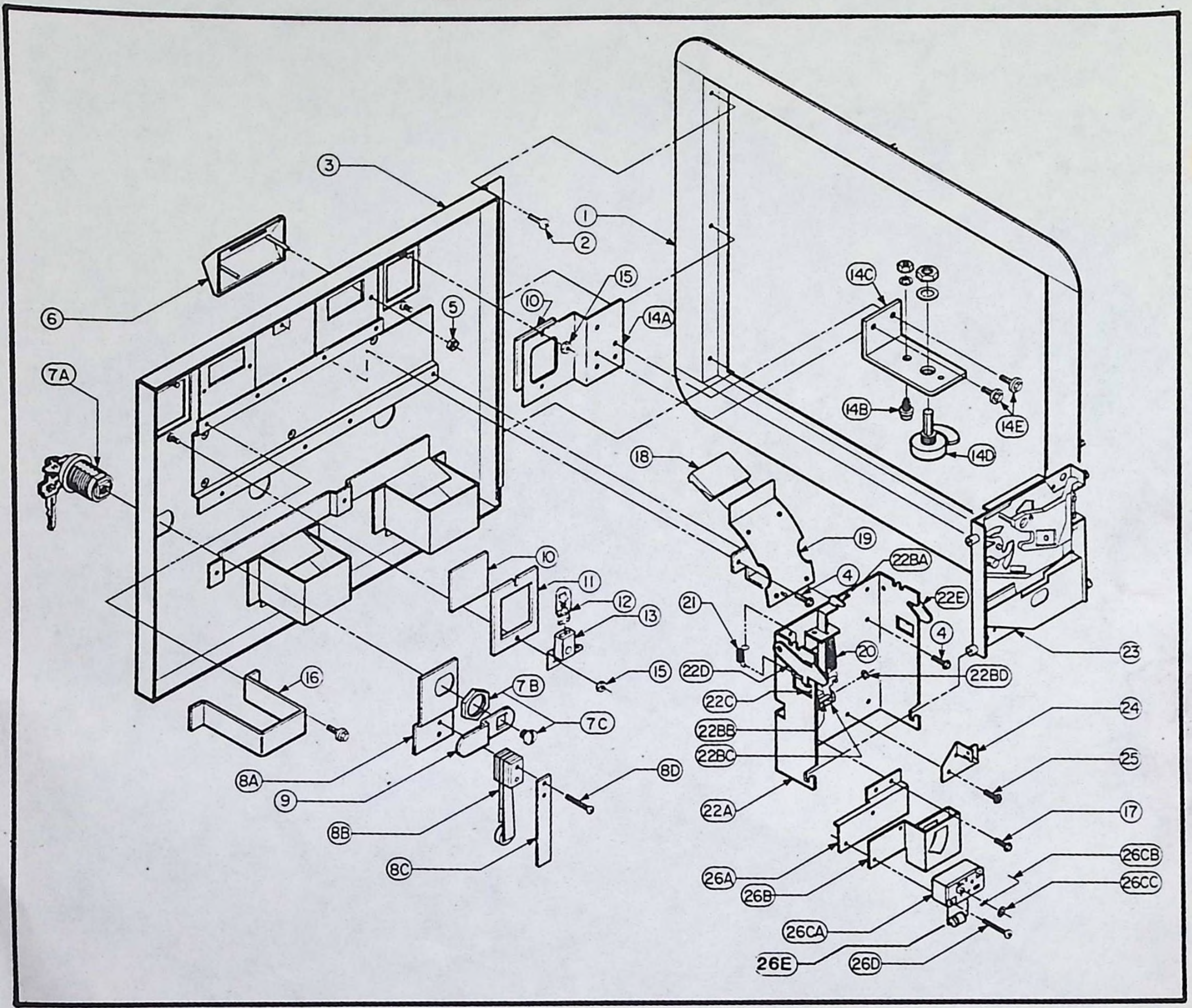


BALL STOP ASSEMBLY (START GATE)
PART NO. A365-07550-0001

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CORE PLUG & BRACKET ASSEMBLY	AH03-00027-0000	1
2	COIL & TUBING ASSEMBLY	A360-00044-0000	1
	COIL: 2 LUG	A365-00067-0006	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: 1.686" X 5/8" (42.8mm X 15.8mm)	0017-00041-0605	1
3	PLUNGER	0967-00705-00XF	1
4	SPRING WASHER	0017-00104-0073	1
5	COMPRESSION SPRING	0010-00274-0196	1
6	CATCH PLATE	0E35-00924-0000	1
7	STOP PLATE BRACKET	0E35-00148-0000	1
8	PLUNGER RETAINER BRACKET	0E35-00144-00XF	1
9	BALL STOP ROD	0365-03400-0004	2
10	LOCKING NUT #8-32	0017-00103-0041	2
11	MOUNTING BRACKET & PLATE ASSEMBLY	A365-07500-0004	1
12	COIL & PLUNGER RETAINER BRACKET	0H03-00112-00XF	1
13	NYLINER: COIL, SNAP-IN	0017-00042-0429	2
14	PHILLIPS PAN HEAD SCREW #8-32 X ¼" (6.35mm)	0017-00101-0161	1
15	COIL MOUNTING BRACKET	0365-02500-0009	1
16	PHILLIPS PAN HEAD SCREW #8-32 X 3/8" (9.5mm)	0017-00101-0162	2
17	COIL & POLE PIECE ASSEMBLY	AE35-00058-0000	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
18	HEX HEAD SCREW #8-32 X 3/8" (9.5mm)	0017-00101-0160	1
19	FLAT WASHER: #8	0017-00104-0150	1
20	EXTERNAL LOCK WASHER #8	0017-00104-0010	1
21	ARMATURE PLATE	0360-00314-0000	1
22	ARMATURE W/O EARS	0365-00136-01XF	1
23	SPRING RETAINER	0390-00107-00XF	1
24	EXTENSION SPRING	0010-00135-0200	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

COIN DOOR ASSEMBLY—U.S.A. 25¢
PART NO.



COIN DOOR WITH CABLE ASSEMBLY PARTS LIST—U.S.A. 25¢
PART NO.

ITEM	PART NO.	DESCRIPTION	QTY
1*	0090-00002-048K	DOUBLE ENTRY COIN DOOR FRAME	1
2*	0017-00101-0121	#6—32 X 5/16″ PHILLIPS TRUSS HEAD SCREW	3
3	A090-00072-06BK	COIN DOOR: 2-HOLE PAINTED	1
4	0017-00101-0123	#8 X ¼″ UNSLOTTED HEX HEAD SCREW	9
5	0017-00103-0059	PUSH NUT	4
6	0090-00912-0000	COIN ENTRY PLATE—25¢	2
7A	0017-00005-0200	LOCK: INDIVIDUAL KEYED W/2 KEYS	1
7B	0017-00103-0079	¾ HEX NUT	1
7C	0017-00101-0125	#10—32 X ¼″ SLOTTED PAN HEAD SCREW	1
8	A090-00096-0000	ANTI-SLAM SWITCH & BRACKET ASSEMBLY	1
8A	0090-00185-00XF	DOOR TILT SWITCH BRACKET	1

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COIN DOOR WITH CABLE ASSEMBLY PARTS LIST—U.S.A. 25¢, CONT'D
PART NO.

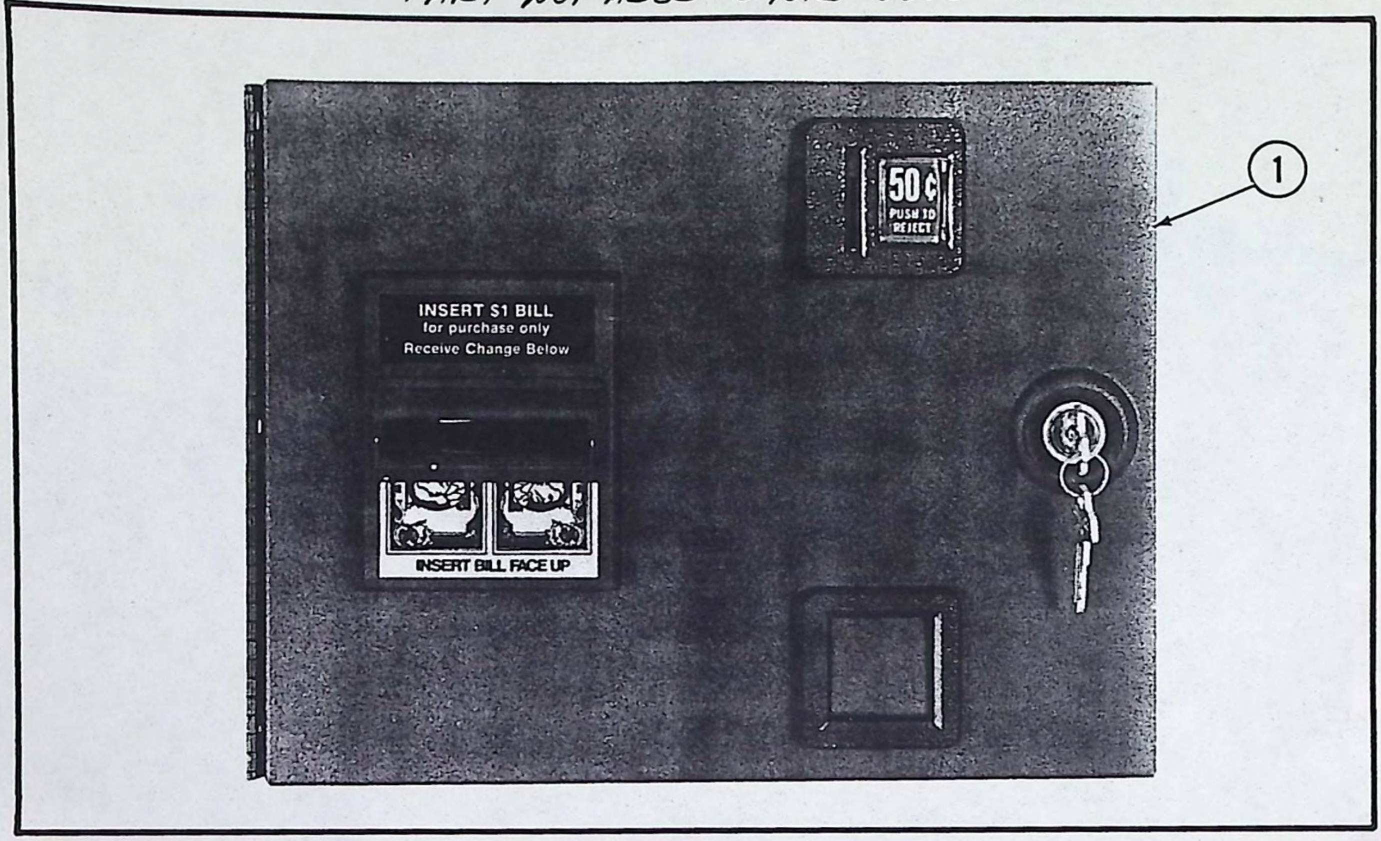
ITEM	PART NO.	DESCRIPTION	QTY
8B	A090-00095-0000	DOOR ANTI-SLAM SWITCH	1
8C	0090-00126-01XF	SWITCH BACK-UP PLATE	1
8D	0017-00101-0155	#4—40 X 9⁄16″ PHILLIPS PAN HEAD	2
9	0017-00005-0238	DOOR CAM	1
10	0090-00903-9500	25¢ WINDOW	2
11	0090-00438-0000	COIN PLEX RETAINER	1
12	0017-00003-0501	LAMP: 6.3 VOLT, WEDGE BASE #555	2
13	0017-00031-0048	WEDGE BASE SOCKET W/BRACKET	2
14	A090-00647-0000	BRACKET & SWITCH ASSEMBLY	1
14A	0090-00179-0000	CABLE & SWITCH MOUNTING BRACKET	1
14B	0017-00032-0120	PUSH-BUTTON SWITCH	1
14C	0360-00171-00XF	BRACKET: VOLUME CONTROL MOUNTING	1
14D	105E-00003-0001	POTENTIOMETER: 0-100 OHMS, WIREWOUND	1
14E	0017-00101-0123	#8 X 7⁄8″ UNSLOTTED HEX HEAD SCREW	2
15	0017-00103-0084	#6—32 HEX NUT W/SEMS	4
16	0090-00434-00XF	SWITCH GUARD	1
17	0017-00101-0124	#6 X 1⁄4″ UNSLOTTED HEX HEAD SCREW	4
18	0090-00911-0000	INSULATOR	2
19	A090-00087-0000	COIN CHUTE & TOP ASSEMBLY	2
	A090-00081-00XF	COIN CHUTE & BRACKET ASSEMBLY	1
	0090-00172-00XF	COIN CHUTE TOP	1
	0017-00101-0140	#4—40 X 5⁄16″ PHILLIPS PAN HEAD SCREW	3
	0017-00007-0162	COTTER PIN	4
20	0010-00134-0000	SPRING:	2
21	0010-00181-0000	SPRING:	4
22	A090-00115-0000	COIN ACCEPTOR FRAME SUB-ASSEMBLY	2
22A	A090-00118-0000	COIN ACCEPTOR & BUSHING ASSEMBLY	1
22B	A090-00116-0000	REJECT LEVER ASSEMBLY	2
22BA	0090-00182-00XF	REJECT LEVER	1
22BB	0090-00129-00XF	POST: PIVOT REJECTOR	1
22BC	0090-00167-00XF	PIVOT LEVER	1
22BD	0017-00100-0012	E-RING: .125″ DIA.	1
22C	0017-00007-0083	ROLL PIN: 1⁄8″ X 1 5⁄8″	1
22D	0093-00145-01XF	LATCH: LEFT	1
22E	0093-00145-00XF	LATCH: RIGHT	1
	0090-00910-00XF	REJECT BUTTON	1
	0090-00183-0000	BUTTON STOP	1
	0017-00101-0140	#4—40 X 5⁄16″ PHILLIPS PAN HEAD SCREW	1
23	0151-00086-0000	COIN ACCEPTOR W/STRING CUTTER	2
24	A090-00064-0100	ANTI-PENNY DEVICE	2
25	0017-00101-0099	#6 X 1⁄4″ SLOTTED HEX HEAD MACHINE SCREW	4
26	A090-00654-0000	COIN GUIDE, SWITCH & DIODE ASSEMBLY	1
26A	0090-00162-00XF	BRACKET: COIN SWITCH MOUNTING	1
26B	0017-00005-0203	COIN SWITCH CHUTE	1
26C	A090-00059-0400	COIN SWITCH & WIRE ASSEMBLY	1
26CA	0017-00005-0195	COIN SWITCH	1
26CB	0010-00599-0000	COIN SWITCH WIRE	1
26CC	0017-00007-0015	PUSH-ON RING	1
26D	0017-00101-0147	#4—40 X 3⁄4″ PHILLIPS PAN HEAD SCREW	4
26E	103E-00002-0005	DIODE: 1N4148, 500 MA, 100V	2
	0090-00184-0000	COIN SWITCH COVER (NOT SHOWN)	2
	A982-00015-0007	DOOR CABLE ASSEMBLY: STANDARD (NOT SHOWN)	1
	0017-00007-0019	KEY HOOK: DOOR	1

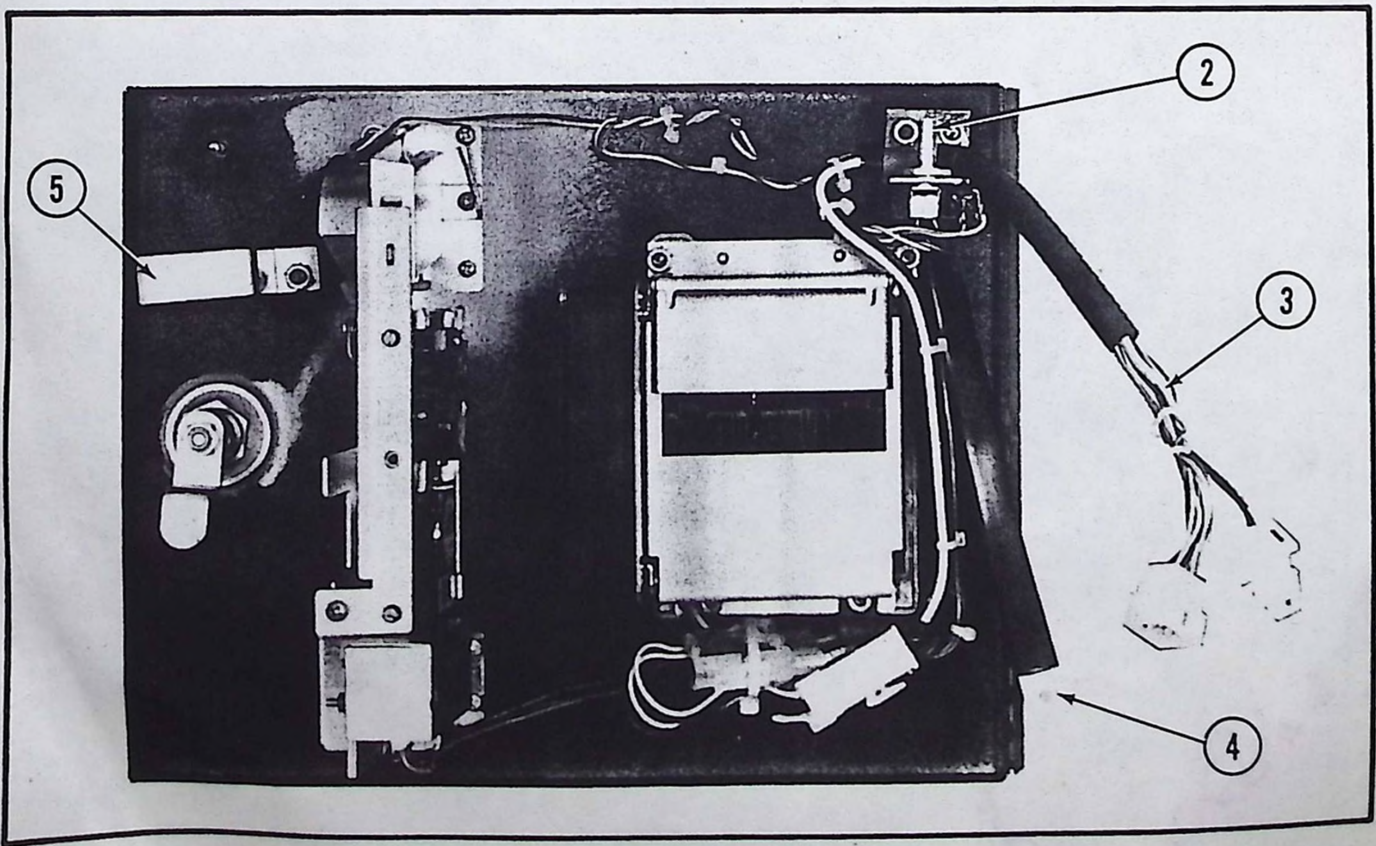
***THESE ITEMS ARE NOT PART OF THE DOOR ASSEMBLY & MUST BE ORDERED SEPARATELY.**

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

COIN DOOR ASSEMBLY WITH VALIDATOR (OPTIONAL)

PART No. A365-09015-0000





COIN DOOR ASSEMBLY W/VALIDATOR (OPTIONAL)
PART NO. A365-09015-0000

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	COIN DOOR: 1 CHUTE W/VALIDATOR	A365-08915-0000	1
2	SWITCH W/BRACKET ASSEMBLY	A090-00648-0000	1
	PUSH-BUTTON SWITCH	0017-00032-0120	1
	BRACKET: VOLUME CONTROL MOUNTING	0360-00171-00XF	1
	POTENTIOMETER: 0-100 OHMS, WIRE-WOUND	105E-00003-0001	1
3	COIN DOOR CABLE ASSEMBLY (W/VALIDATOR)	A365-09100-0001	1
4	GROUND STRAP: 7" (177.8mm) (W/SLEEVE)	0017-00009-0609	1
5	SWITCH GUARD	0090-00434-01XF	1

For games containing the MARS ELECTRONICS™ BILL ACCEPTOR, service information can be obtained from MARS ELECTRONICS.

FOR SERVICE CONTACT:

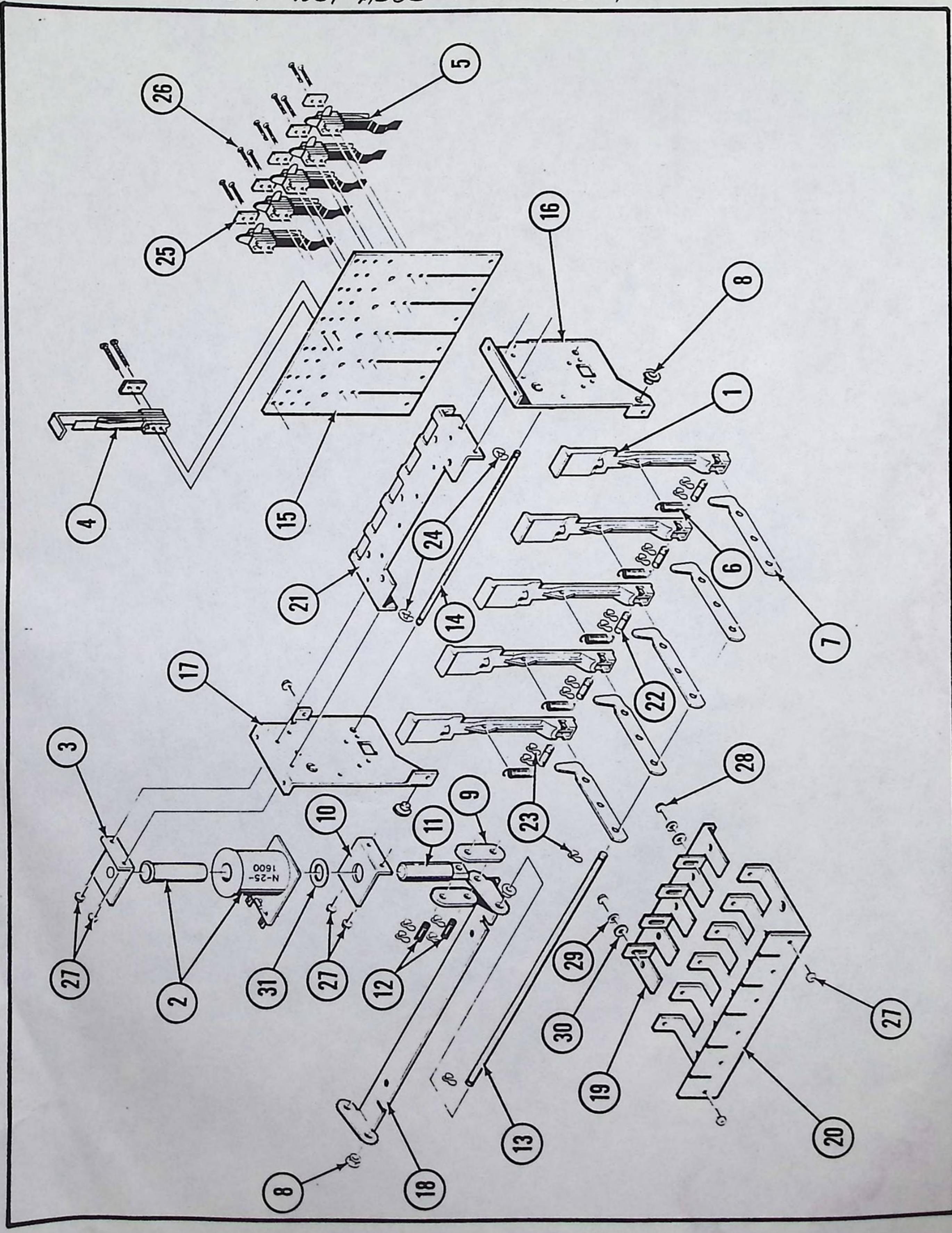
MARS ELECTRONICS
MONEY SYSTEMS DIVISION
WESTCHESTER, PENNSYLVANIA 19380

PHONE: (215)-430-2500 - PENNSYLVANIA
(800)-345-8172 - TOLL FREE

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

DROP TARGET ASSEMBLY - 5 UNIT SIDE BY SIDE

PART NO. A365-05550-0001



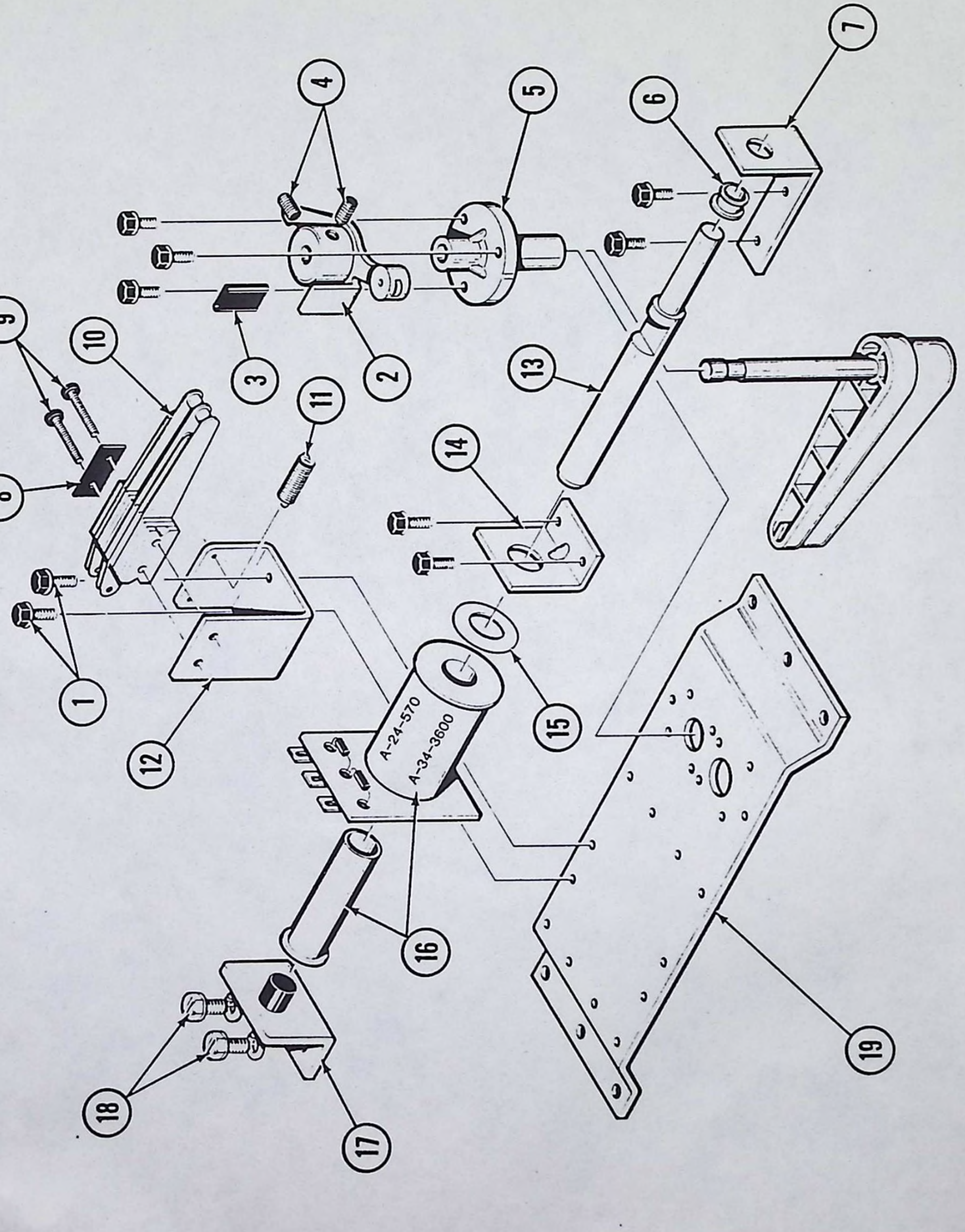
DROP TARGET ASSEMBLY - 5 UNIT SIDE-BY-SIDE
PART NO. A365-05550-0001

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	TARGET W/DECAL	A365-05501-0002	5
2	COIL & TUBING ASSEMBLY	AB42-00045-0000	1
	COIL: 2 LUG	A365-00067-0019	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: 2" X 3/4" (50.8mm X 19.05mm) FLANGE	0017-00041-0673	1
3	CORE PLUG & BRACKET ASSEMBLY	A360-00014-0000	1
4	SWITCH ASSEMBLY W/BRACKET	AE94-00046-0000	1
5	SWITCH W/DIODE ASSEMBLY	A967-00066-0000	5
	DIODE: 1N4148, 100 VOLT, 500MA	103E-00002-0005	5
6	EXTENSION SPRING	0010-00275-0363	5
7	DROP TARGET LINK	0360-00117-00XF	5
8	NYLINER: SNAP-IN COIL	0017-00042-0429	4
9	LINK	0360-00118-0000	2
10	COIL BRACKET	0360-00122-00XF	1
11	PLUNGER	0360-00717-00XF	1
12	LINK PIN	0360-00721-00XF	2
13	PIVOT SHAFT	0365-02060-00XF	1
14	SPRING ROD	0365-02055-0005	2
15	BACK PLATE	0365-02035-0005	1
16	END PLATE	0371-00124-00XF	1
17	END PLATE	0371-00125-00XF	1
18	RESET BAR	0365-02010-0005	1
19	ADJUSTABLE BOTTOM PLATE	0365-02020-0005	1
20	STATIONARY BOTTOM PLATE	0365-02015-0005	1
21	LATCH PLATE	0365-02040-0005	1
22	PIVOT PIN	0360-00720-00XF	5
23	KLIP RING .250" DIA. (6.35mm)	0017-00100-0117	16
24	RETAINING RING .125" DIA. (3.17mm)	0017-00100-0118	4
25	SWITCH PLATE	0020-00202-0000	6
26	PHILLIPS PAN HEAD SCREW #5-40 X 3/4" (19.05mm)	0017-00101-0172	12
27	HEX HEAD SCREW #8-32 X 3/8" (9.5mm)	0017-00101-0184	14
28	PHILLIPS PAN HEAD SCREW #8-32 X ½" (12.7mm)	0017-00101-0207	4
29	SPLIT LOCK WASHER #8	0017-00104-0003	4
30	FLAT WASHER #8	0017-00104-0062	4
31	SPRING WASHER: 1" O.D., .645" I.D., .012" TH.	0017-00104-0063	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT

PART No. AC70-00023-0200



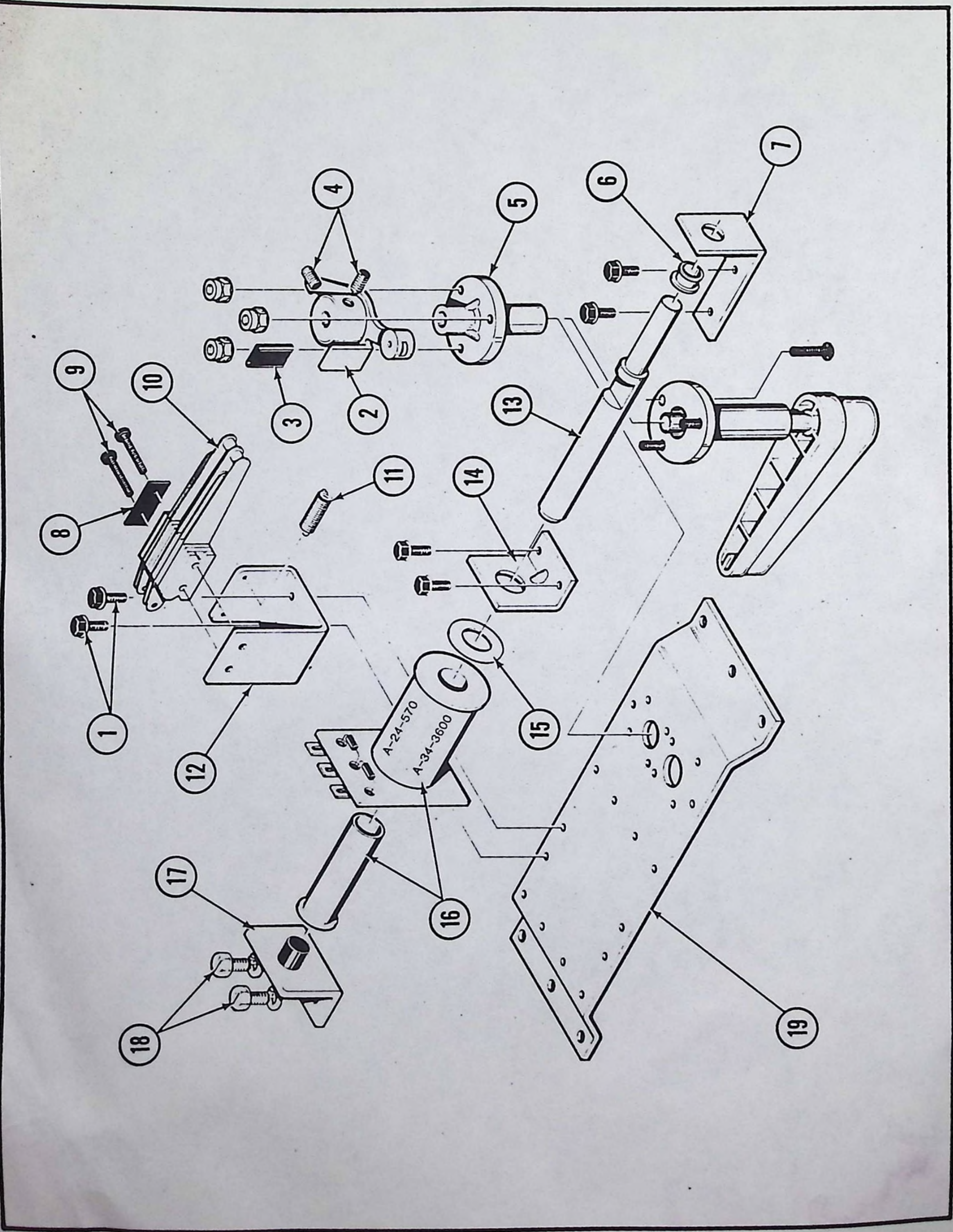
FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT
PART NO. AC70-00023-0200

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	HEX HEAD SCREW: #8-32 X 3/8" (9.525mm)	0017-00101-0184	9
2	LEVER ARM: HUB & CAP ASSEMBLY LEFT	A360-00038-0000	1
3	TUBING: 5/16" (7.9375mm) X ½" (12.7mm)	0360-00945-0000	1
4	SET SCREW: ¼"-28 X 5/16" (6.35mm X 7.9375mm)	0017-00101-0186	2
5	FLIPPER BEARING	0017-00042-0413	1
6	NYLINER: SNAP-IN COIL	0017-00042-0418	1
7	BRACKET: LEFT FLIPPER STOP	0360-00152-01XF	1
8	SWITCH PLATE	0020-00202-0000	1
9	PHILLIPS ROUND HEAD SCREW #5-40 X 1" (25.4mm)	0017-00101-0530	2
10	SWITCH ASSEMBLY W/CAPACITOR: FLIPPER MECHANISH	A365-00315-0300	1
	SWITCH: FLIPPER MECHANISM	A365-00371-0000	1
	CAPACITOR: .01MFD, 500 VOLT, 20% CERAMIC DISC	0171-097P6-AXPC	1
11	EXTENSION SPRING	0010-00275-0353	1
12	SWITCH BRACKET	0360-00145-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	COIL BRACKET	0360-00318-00XF	1
15	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
16	COIL & TUBING ASSEMBLY: 3 LUG	AC70-00026-0000	1
	COIL: 3 LUG	A365-00067-0021	1
	TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	2
17	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
18	HEX HEAD SCREW: UNSLOTTED #10-32 X 3/8" (9.525mm)	0017-00101-0816	2
19	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT W/ EXTENSION

PART No. A365-05020-0001



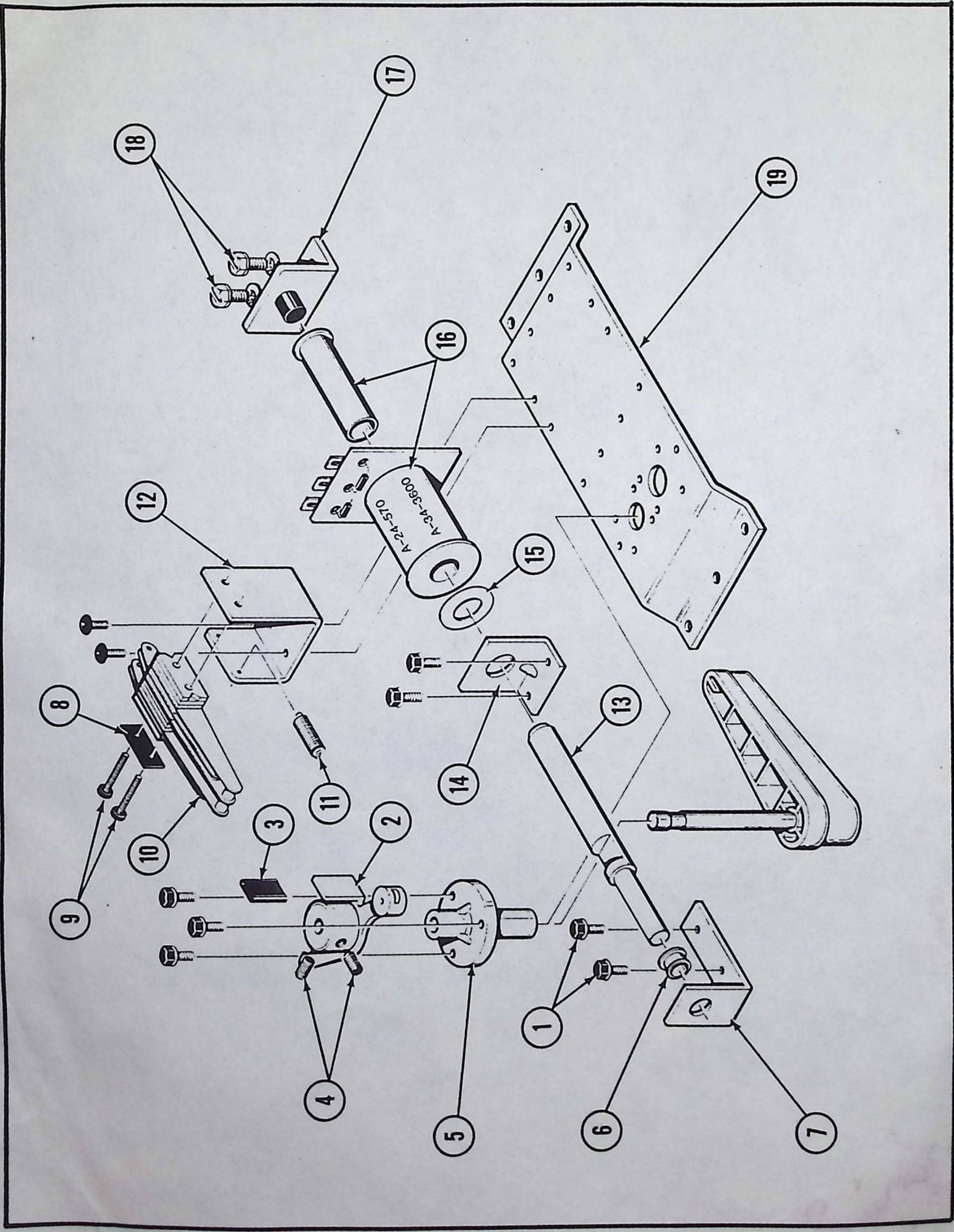
FLIPPER ASSEMBLY: DOUBLE SWITCH LEFT W/EXTENSION
PART NO. A365-05020-0001

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	HEX HEAD SCREW: #8-32 X 3/8" (9.525mm)	0017-00101-0184	6
2	LEVER ARM: HUB & CAP ASSEMBLY LEFT	A360-00038-0000	1
3	TUBING: 5/16" (7.9375mm) X ½" (12.7mm)	0360-00945-0000	1
4	SET SCREW: ¼"-28 X 5/16" (6.35mm X 7.9375mm)	0017-00101-0186	2
5	FLIPPER BEARING	0017-00042-0413	1
6	NYLINER: SNAP-IN COIL	0017-00042-0418	1
7	BRACKET: LEFT FLIPPER STOP	0360-00152-01XF	1
8	SWITCH PLATE	0020-00202-0000	1
9	PHILLIPS ROUND HEAD SCREW #5-40 X 1" (25.4mm)	0017-00101-0530	2
10	SWITCH ASSEMBLY W/CAPACITOR: FLIPPER MECHANISH	A365-00315-0300	1
	SWITCH: FLIPPER MECHANISM	A365-00371-0000	1
	CAPACITOR: .01MFD, 500 VOLT, 20% CERAMIC DISC	0171-097P6-AXPC	1
11	EXTENSION SPRING	0010-00275-0353	1
12	SWITCH BRACKET	0360-00145-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	COIL BRACKET	0360-00318-00XF	1
15	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
16	COIL & TUBING ASSEMBLY: 3 LUG	AC70-00026-0000	1
	COIL: 3 LUG	A365-00067-0021	1
	TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	2
17	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
18	HEX HEAD SCREW: UNSLOTTED #10-32 X 3/8" (9.525mm)	0017-00101-0816	2
19	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1
20	BEARING: NYLON EXTENSION	0365-17042-1901	1
21	PHILLIPS PAN HEAD SCREW: #8-32 X 5/8" (15.875mm)	0017-00101-0168	3
22	LOCKING NUT: #8-32	0017-00103-0041	3

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: DOUBLE SWITCH RIGHT

PART No. AC70-00023-0100



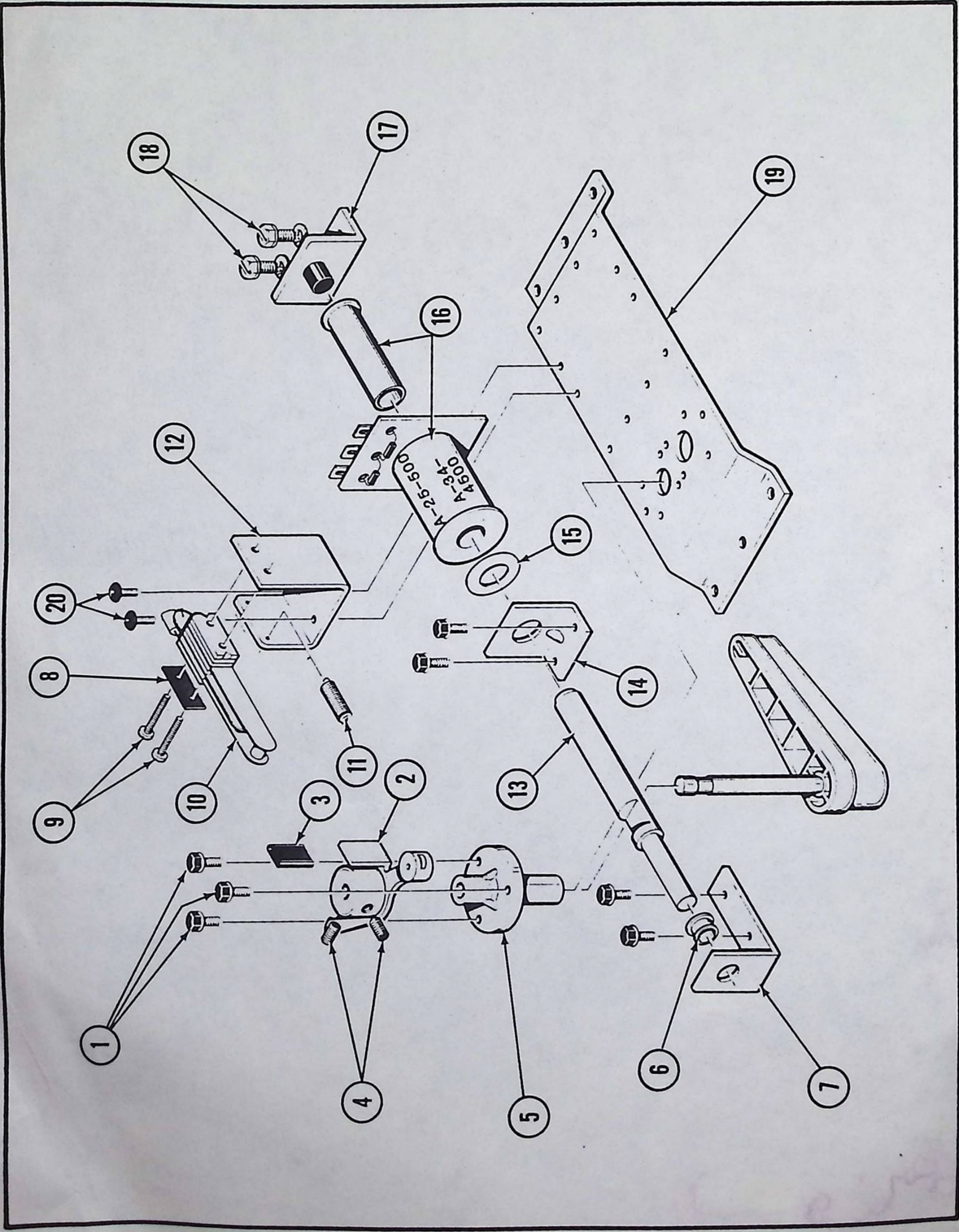
FLIPPER ASSEMBLY: DOUBLE SWITCH RIGHT
PART NO. AC70-00023-0100

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	HEX HEAD SCREW: #8-32 X 3/8" (9.525mm)	0017-00101-0184	9
2	LEVER ARM: HUB & CAP ASSEMBLY	A360-00039-0000	1
3	TUBING: 5/16" (7.9375mm) X ½" (12.7mm)	0360-00945-0000	1
4	SET SCREW: ¼"-28 X 5/16" (6.35mm X 7.9375mm)	0017-00101-0186	2
5	FLIPPER BEARING	0017-00042-0413	1
6	NYLINER: SNAP-IN COIL	0017-00042-0418	1
7	BRACKET: RIGHT FLIPPER STOP	0360-00152-02XF	1
8	SWITCH PLATE	0020-00202-0000	1
9	PHILLIPS ROUND HEAD SCREW #5-40 X 1" (25.4mm)	0017-00101-0530	2
10	SWITCH ASSEMBLY W/CAPACITOR: FLIPPER MECHANISH	A365-00315-0300	1
	SWITCH: FLIPPER MECHANISM	A365-00371-0000	1
	CAPACITOR: .01MFD, 500 VOLT, 20% CERAMIC DISC	C171-097P6-AXPC	1
11	EXTENSION SPRING	0010-00275-0353	1
12	SWITCH BRACKET	0360-00145-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	COIL BRACKET	0360-00318-00XF	1
15	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
16	COIL & TUBING ASSEMBLY: 3 LUG	AC70-00026-0000	1
	COIL: 3 LUG	A365-00067-0021	1
	TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	2
17	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
18	HEX HEAD SCREW: UNSLOTTED #10-32 X 3/8" (9.525mm)	0017-00101-0816	2
19	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY, SINGE SWITCH RIGHT

PART NO. A365-05030-0002



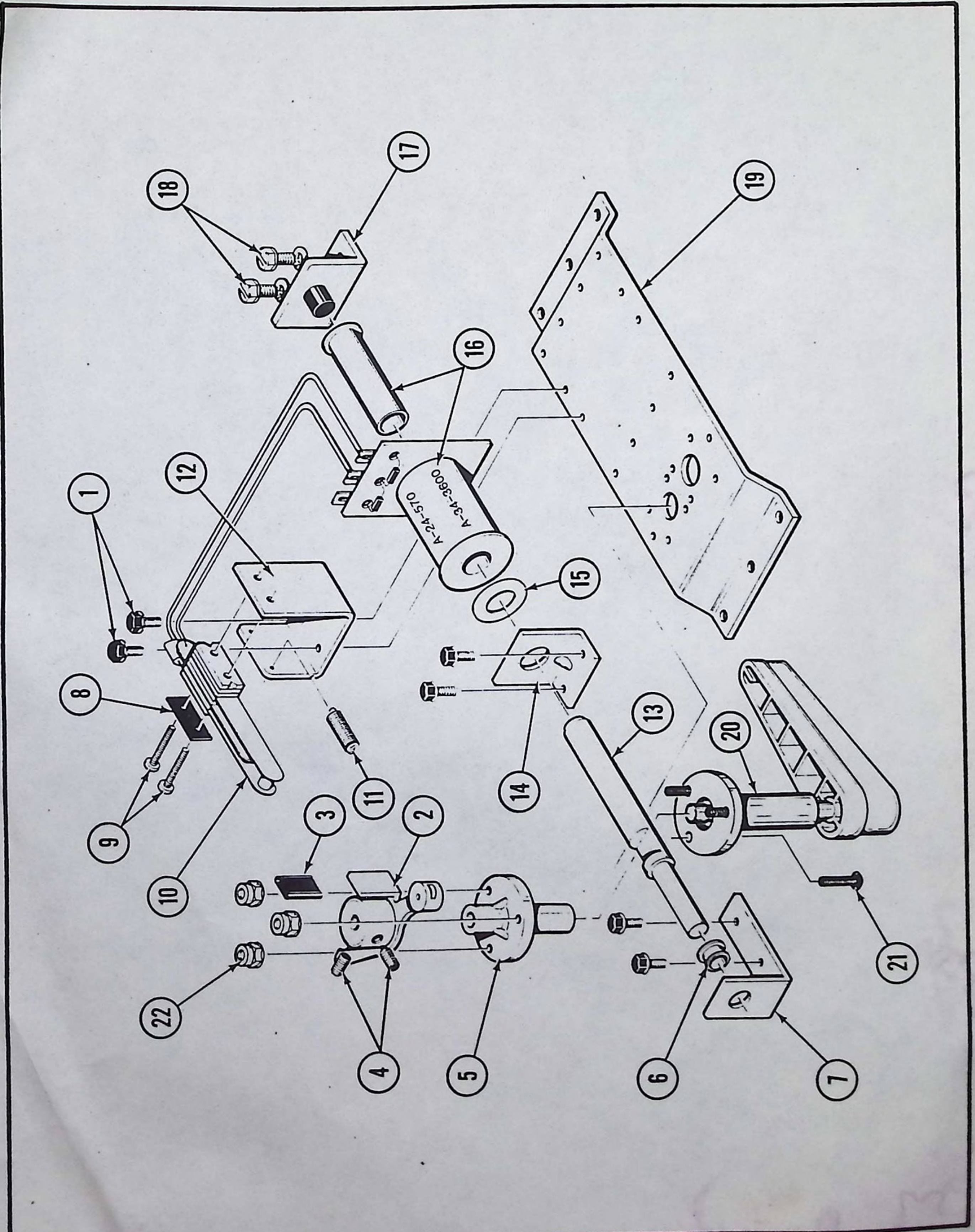
FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT
PART NO. A365-05030-0002

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	HEX HEAD SCREW: #8-32 X 3/8" (9.525mm)	0017-00101-0184	7
2	LEVER ARM: HUB & CAP ASSEMBLY RIGHT	A360-00039-0000	1
3	TUBING: 5/16" (7.9375mm) X ½" (12.7mm)	0360-00945-0000	1
4	SET SCREW: ¼"-28 X 5/16" (6.35mm X 7.9375mm)	0017-00101-0186	2
5	FLIPPER BEARING	0017-00042-0413	1
6	NYLINER: SNAP-IN COIL	0017-00042-0418	1
7	BRACKET: RIGHT FLIPPER STOP	0360-00152-02XF	1
8	SWITCH PLATE	0020-00202-0000	1
9	PHILLIPS ROUND HEAD SCREW #5-40 X ¾" (19.05mm)	0017-00101-0528	2
10	SWITCH ASSEMBLY W/CAPACITOR: FLIPPER MECHANISM	A365-00315-0400	1
	SWITCH: FLIPPER MECHANISM	A365-00365-0000	1
	CAPACITOR: .01MFD, 500 VOLT, 20% CERAMIC DISC	0171-097P6-AXPC	1
11	EXTENSION SPRING	0010-00275-0353	1
12	SWITCH BRACKET	0360-00145-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	COIL BRACKET	0360-00318-00XF	1
15	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
16	COIL & TUBING ASSEMBLY: 3 LUG	A360-00045-0000	1
	COIL: 3 LUG	A365-00067-0009	1
	TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	2
17	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
18	HEX HEAD SCREW: UNSLOTTED #10-32 X 3/8" (9.525mm)	0017-00101-0816	2
19	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1
20	PHILLIPS PAN HEAD SCREW: #8-32 x ¼" (6.35 mm)	0017-00101-0161	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT W/ EXTENSION

PART NO, A365-05030-0001



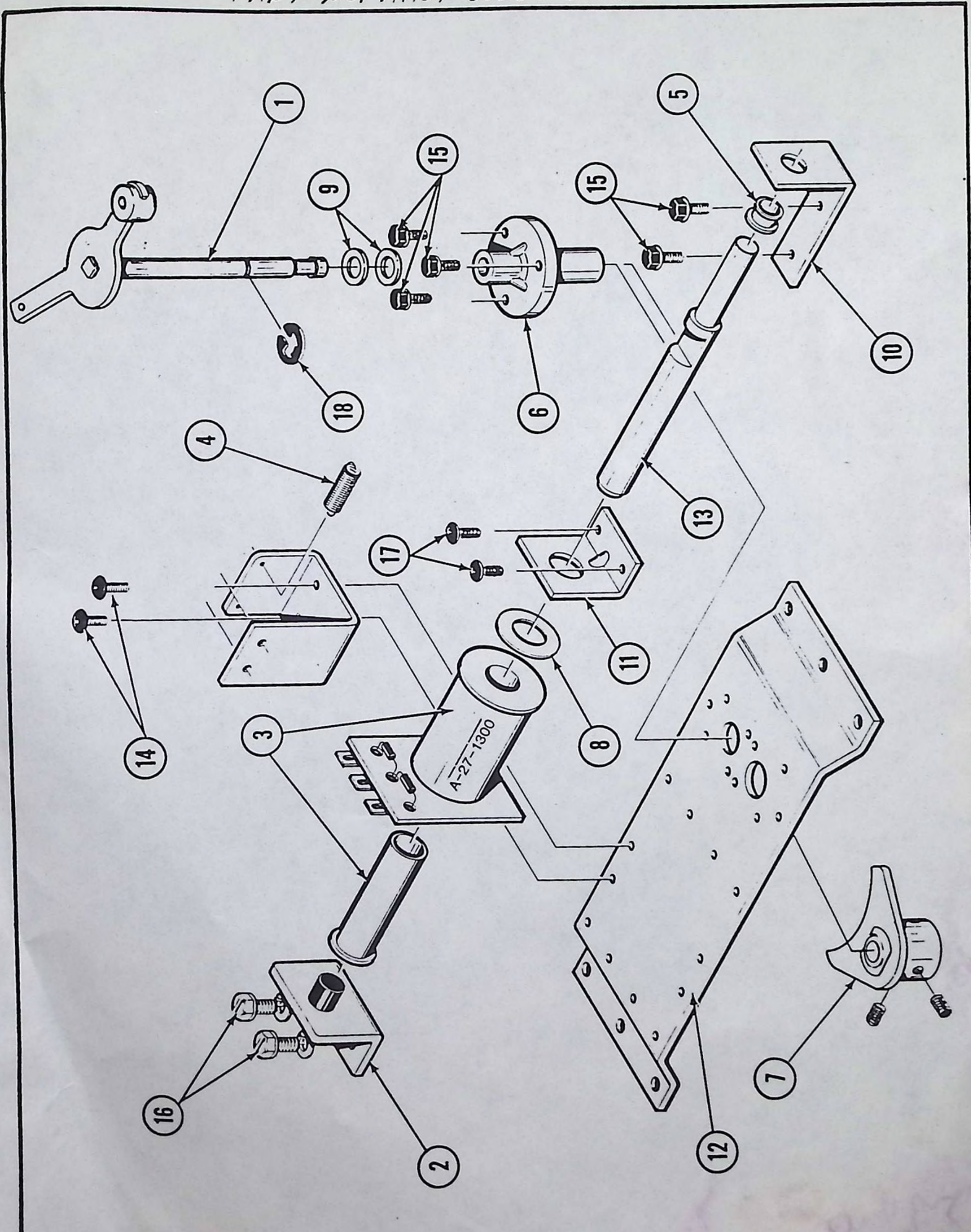
FLIPPER ASSEMBLY: SINGLE SWITCH RIGHT W/EXTENSION
PART NO. A365-05030-0001

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	HEX HEAD SCREW: #8-32 X 3/8" (9.525mm)	0017-00101-0184	6
2	LEVER ARM: HUB & CAP ASSEMBLY RIGHT	A360-00039-0000	1
3	TUBING: 5/16" (7.9375mm) X ½" (12.7mm)	0360-00945-0000	1
4	SET SCREW: ¼"-28 X 5/16" (6.35mm X 7.9375mm)	0017-00101-0186	2
5	FLIPPER BEARING	0017-00042-0413	1
6	NYLINER: SNAP-IN COIL	0017-00042-0418	1
7	BRACKET: RIGHT FLIPPER STOP	0360-00152-02XF	1
8	SWITCH PLATE	0020-00202-0000	1
9	PHILLIPS ROUND HEAD SCREW #5-40 X 3/4" (19.05mm)	0017-00101-0528	2
10	SWITCH ASSEMBLY W/CAPACITOR: FLIPPER MECHANISH	A365-00315-0400	1
	SWITCH: FLIPPER MECHANISM	A365-00365-0000	1
	CAPACITOR: .01MFD, 500 VOLT, 20% CERAMIC DISC	0171-097P6-AXPC	1
11	EXTENSION SPRING	0010-00275-0353	1
12	SWITCH BRACKET	0360-00145-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	COIL BRACKET	0360-00318-00XF	1
15	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
16	COIL & TUBING ASSEMBLY: 3 LUG	AC70-00026-0000	1
	COIL: 3 LUG	A365-00067-0021	1
	TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	2
17	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
18	HEX HEAD SCREW: UNSLOTTED #10-32 X 3/8" (9.525mm)	0017-00101-0816	2
19	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1
20	BEARING: NYLON EXTENSION	0365-17042-1901	1
21	PHILLIPS PAN HEAD SCREW: #8-32 X 5/8" (15.875mm)	0017-00101-0168	3
22	LOCKING NUT: #8-32	0017-00103-0041	3

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

KICKER ASSEMBLY: MULTI-BALL

PART No. AH01-00027-0000



KICKER ASSEMBLY: MULTI-BALL - PARTS LIST
PART NO. AH01-00027-0000

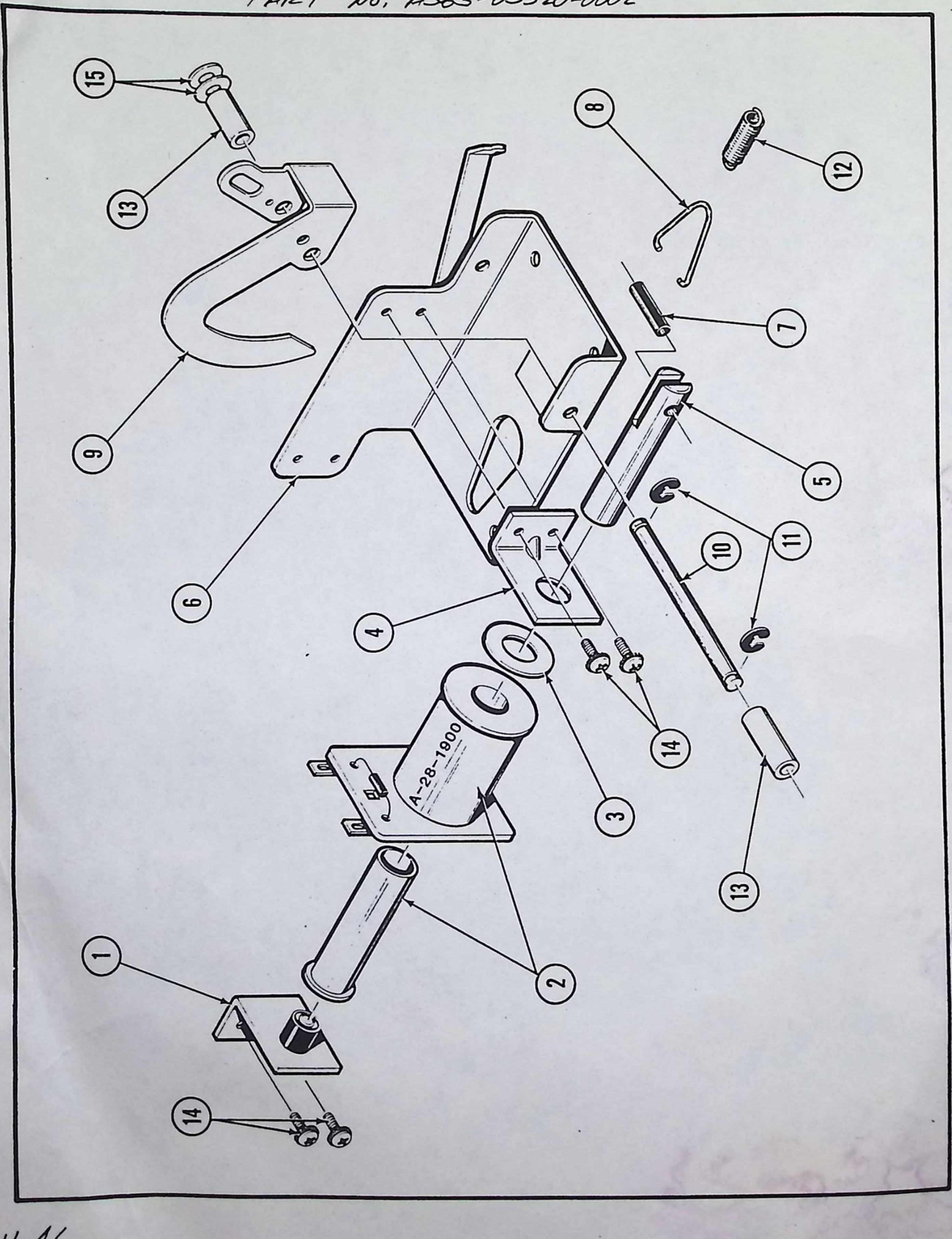
ITEM	DESCRIPTION	PART NUMBER	QTY.
1	SHAFT W/PLATE ASSEMBLY	AH01-00026-00XF	1
2	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
3	COIL & TUBING ASSEMBLY	A360-00211-0000	1
	COIL: 2 LUG	A365-00067-0008	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: L = 1.686" X 5/8" (42.8mm X 15.8mm) FLANGE	0017-00041-0605	1
4	EXTENSION SPRING	0010-00275-0353	1
5	SNAP-IN COIL NYLINER	0017-00042-0418	1
6	FLIPPER BEARING	0017-00042-0413	1
*7	MULTI-BALL KICKER ASSEMBLY	AH01-00028-00XF	1
8	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
9	NYLON FLAT WASHER: .257" I.D., .500" O.D., .032" TH.	0017-00104-0079	2
10	LEFT FLIPPER STOP BRACKET	0360-00152-01XF	1
11	COIL BRACKET	0360-00318-00XF	1
12	FLIPPER MOUNTING BRACKET	0365-00101-00XF	1
13	PLUNGER	0360-00718-00XF	1
14	SWITCH BRACKET	0360-00145-00XF	1
15	HEX HEAD SCREW #8-32 X 3/8" (9.5mm)	0017-00101-0184	5
16	SLOTTED HEX HEAD SCREW #10-32 X 3/8" (9.5mm)	0017-00101-0480	2
17	PHILLIPS PAN HEAD SCREW #8-32 X ¼" (6.3mm)	0017-00101-0161	4
18	RETAINING RING: .250" DIA. (6.3mm)	0017-00100-0120	1

* NOT PART OF ABOVE ASSEMBLY & MUST BE ORDERED SEPARATELY

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SAUCER ASSEMBLY - LEFT

PART No. A365-05320-0002



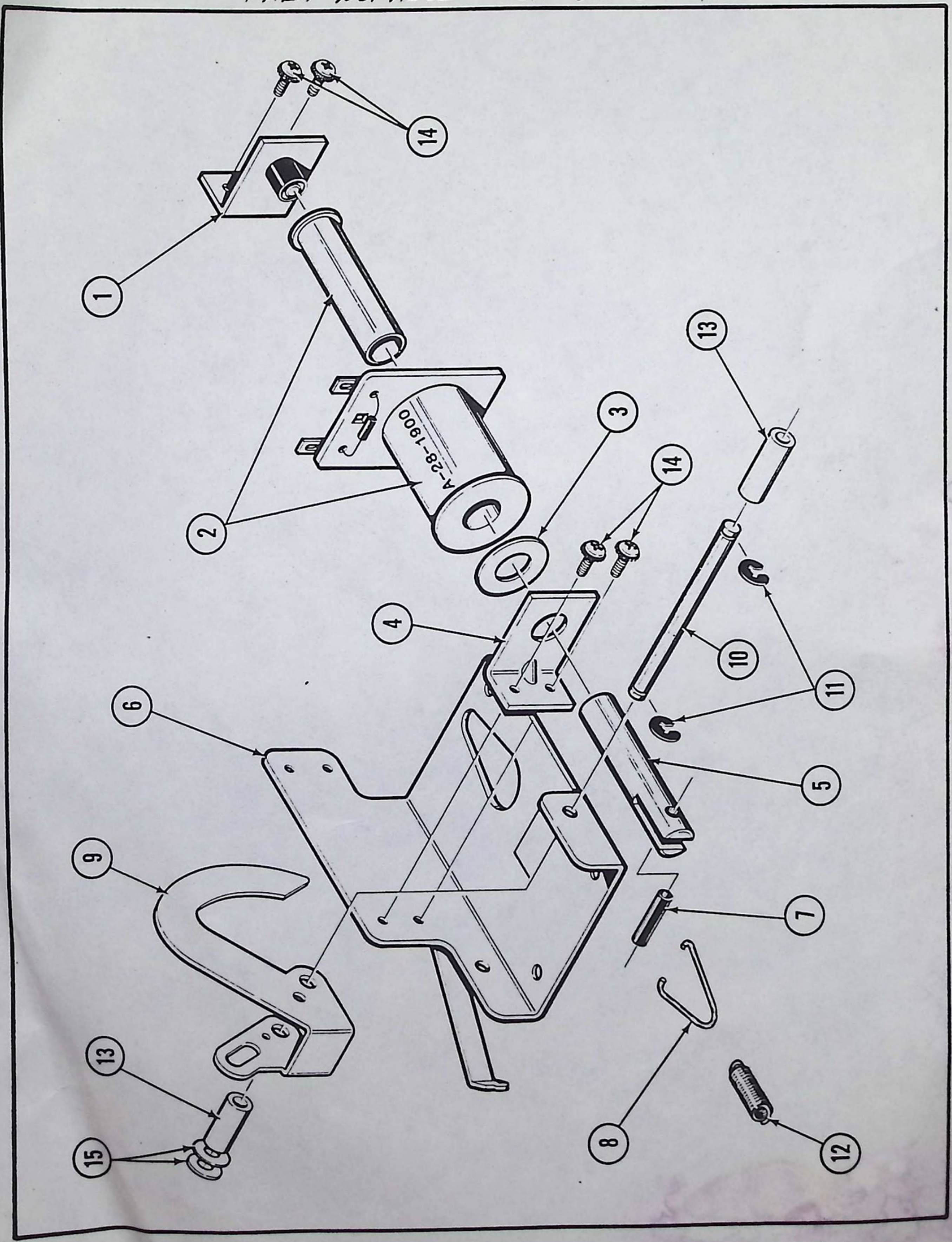
SAUCER ASSEMBLY - LEFT
PART NO. A365-05320-0002

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CORE PLUG & BRACKET ASSEMBLY	A360-00012-0000	1
2	COIL & TUBING ASSEMBLY	AH01-00049-0000	1
	COIL: 2 LUG	A365-00067-0030	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: 1.686" X 5/8" (42.8mm X 15.8mm) FLANGE	0017-00041-0605	1
3	SPRING WASHER: .515 I.D., .875 O.D., .013 THK	0017-00104-0023	1
4	SOLENOID BRACKET	0360-00313-00XF	1
5	PLUNGER	0360-00714-00XF	1
6	MOUNTING BRACKET ASSEMBLY: LEFT	A365-00340-02XF	1
7	ROLL PIN 3/16" DIA. X 5/8" (4.76mm X 15.8mm)	0017-00007-0089	1
8	SPRING RETAINER WIRE FORM	0H01-00919-0000	1
9	KICKER ASSEMBLY: LEFT	AH01-00048-0100	1
	KICKER ARM: LEFT	0365-00166-01XF	1
10	SHAFT	0360-00708-00XF	1
11	E-RING 3/16" (4.76mm)	0017-00100-0110	2
12	EXTENSION SPRING	0010-00275-0357	1
13	BUSHING	0012-00010-4400	2
14	PHILLIPS ROUND HEAD SCREW #6-32 X ¼" (6.35mm)	0017-00101-0134	4
15	FLAT WASHER: .193" I.D., .437" O.D., .046" TH.	0017-00104-0022	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SAUCER ASSEMBLY- RIGHT

PART No. A365-05310-0002



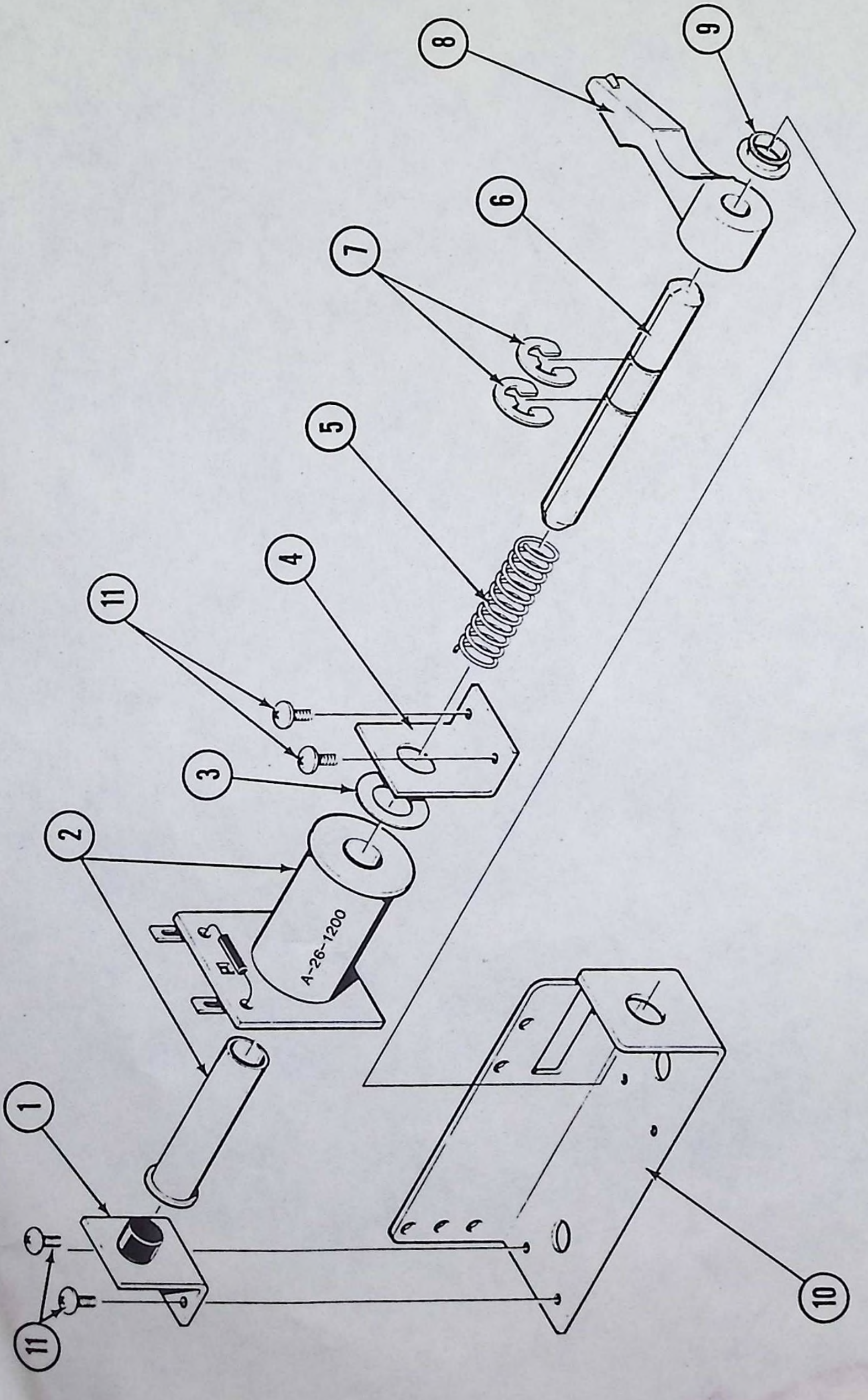
SAUCER ASSEMBLY - RIGHT
PART NO. A365-05310-0002

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CORE PLUG & BRACKET ASSEMBLY	A360-00012-0000	1
2	COIL & TUBING ASSEMBLY	AH01-00049-0000	1
	COIL: 2 LUG	A365-00067-0030	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	TUBING: 1.686" X 5/8" (42.8mm X 15.8mm) FLANGE	0017-00041-0605	1
3	SPRING WASHER: .515 I.D., .875 O.D., .013 THK	0017-00104-0073	1
4	SOLENOID BRACKET	0360-00313-00XF	1
5	PLUNGER	0360-00714-00XF	1
6	MOUNTING BRACKET ASSEMBLY: RIGHT	A365-05311-0001	1
7	ROLL PIN 3/16" DIA. X 5/8" (4.76mm X 15.8mm)	0017-00007-0089	1
8	SPRING RETAINER WIRE FORM	0H01-00919-0000	1
9	KICKER ASSEMBLY: RIGHT	AH01-00048-0000	1
	KICKER ARM: RIGHT	0365-00166-00XF	1
10	SHAFT	0360-00708-00XF	1
11	E-RING 3/16" (4.76mm)	0017-00100-0110	2
12	EXTENSION SPRING	0010-00275-0357	1
13	BUSHING	0012-00010-4400	2
14	PHILLIPS ROUND HEAD SCREW #6-32 X ¼" (6.35mm)	0017-00101-0134	4
15	FLAT WASHER: .193" I.D., .437" O.D., .046" TH.	0017-00104-0022	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SLINGSHOT KICKER ASSEMBLY

PART No. A967-00059-0000



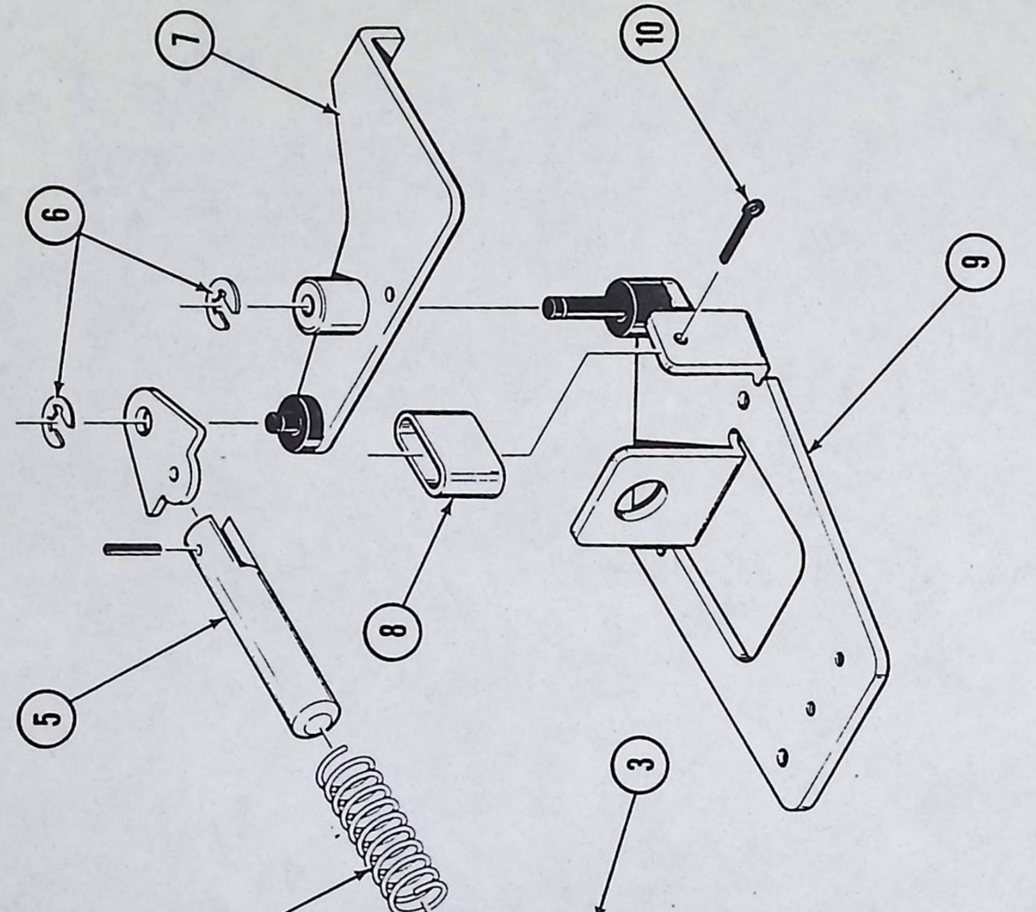
SLINGSHOT KICKER ASSEMBLY
PART NO. A967-00059-0000

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CORE PLUG & BRACKET ASSEMBLY	A967-00011-0000	1
2	COIL & TUBING ASSEMBLY: 2 LUG	A967-00046-0000	1
	COIL: 2 LUG	A365-00067-0006	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	COIL TUBING: L = 1.686" X 5/8" (42.8244mm X 15.875mm)	0017-00041-0605	1
3	SPRING WASHER: .515" I.D., .875" O.D., .013" TH.	0017-00104-0073	1
4	COIL BRACKET	0360-00318-00XF	1
5	COMPRESSION SPRING	0010-00274-0212	1
6	PLUNGER	0967-00701-00XF	1
7	RETAINING RING: .484" (12.2936mm)	0017-00100-0115	2
8	SLINGSHOT KICKER ARM	0967-00901-0000	1
9	NYLINER: SNAP-IN COIL	0017-00042-0430	1
10	SLINGSHOT MOUNTING BRACKET	0967-00130-00XF	1
11	PHILLIPS PAN HEAD SCREW #*-32 X ¼" (6.35mm)	0017-00101-0190	4

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

TOP MOUNTED BALL KICKER ASSEMBLY

PART NO. A360-00234-0000

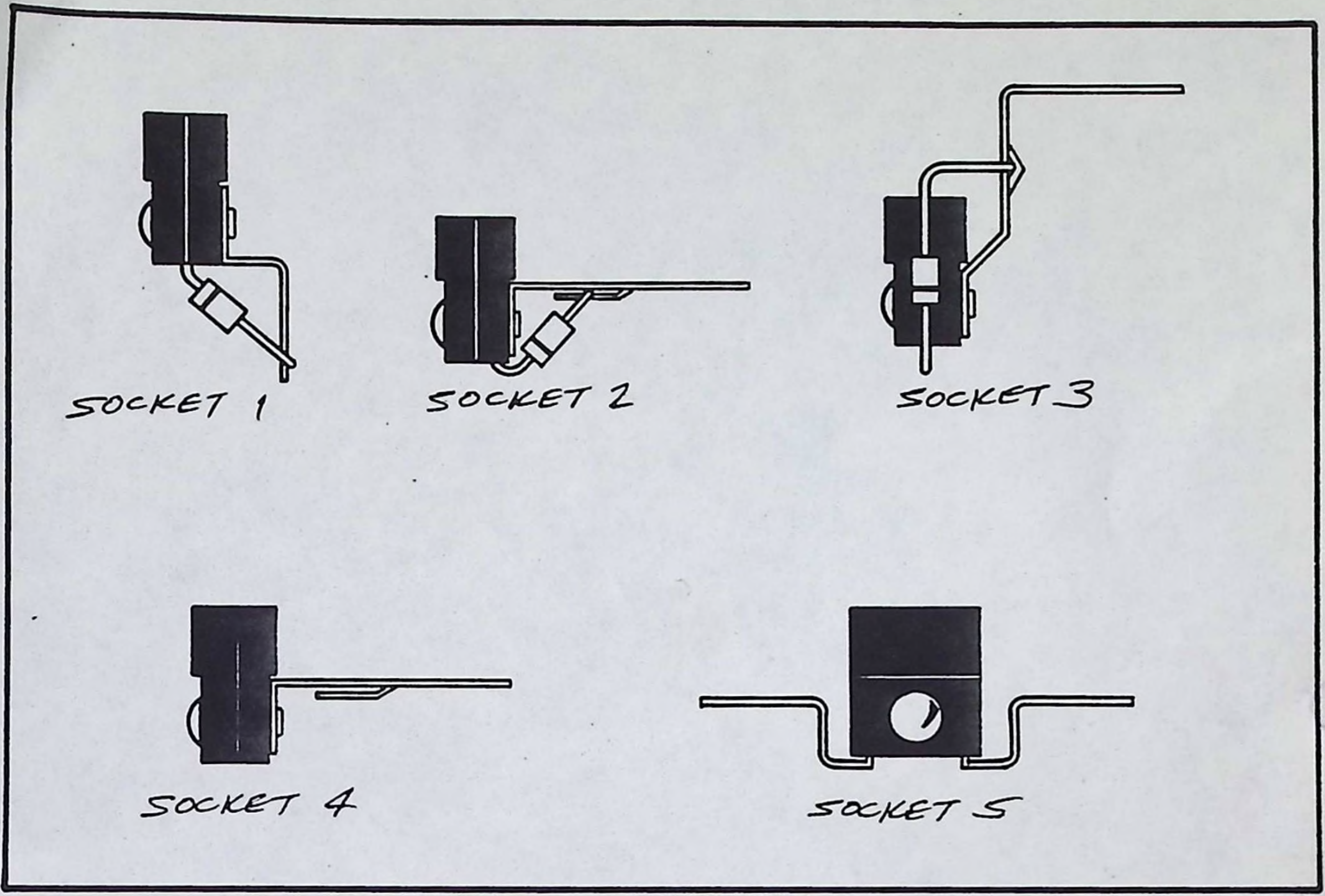


TOP MOUNTED BALL KICKER ASSEMBLY
PART NO. A360-00234-0000

ITEM	DESCRIPTION	PART NUMBER	QTY.
1	CORE PLUG & BRACKET ASSEMBLY	A365-00024-0000	1
2	COIL & TUBING ASSEMBLY: 2 LUG	A360-00044-0000	1
	COIL: 2 LUG	A365-00067-0006	1
	DIODE: 1N4004GP, 400 VOLT, 1 AMP	103E-00002-0015	1
	COIL TUBING: L = 1.686" X 5/8" (42.8244mm X 15,875mm)	0017-00041-0605	1
3	FISHPAPER INSULATOR	0360-00901-0000	1
4	COMPRESSION SPRING	0010-00274-0207	1
5	PLUNGER & LINK ASSEMBLY	A360-00278-0000	1
	PLUNGER	0360-00735-00XF	1
	ROLL PIN 1/8" X 7/16" (3.175mm X 11.1125mm)	0017-00007-0073	1
	KICKER LINK	0360-00941-0000	1
6	RETAINING RING .218" (5.5372mm)	0017-00100-0116	2
7	BALL RETURN KICKER ARM ASSEMBLY	A360-00036-0000	1
8	STRIKER RING	0017-00042-0346	1
9	BASE PLATE ASSEMBLY	A360-00037-0000	1
10	COTTER PIN 3/32" X ¼" (2.38125mm X 12.7mm)	0017-00007-0124	1
11	PHILLIPS PAN HEAD SCREW #8-32 X 3/8" (9.525mm)	0017-00101-0162	2

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

PLAYFIELD LAMP SOCKETS



PLAYFIELD LAMP SOCKETS

ITEM	DESCRIPTION	PART NUMBER	QTY.
1*	LAMP SOCKET W/DIODE ASSEMBLY	A365-00077-0100	6
2*	LAMP SOCKET W/DIODE ASSEMBLY	A365-00077-0200	12
3*	LAMP SOCKET W/DIODE ASSEMBLY	A365-00077-0300	64
4	LAMP SOCKET W/O DIODE	0017-00031-0075	5
5	LAMP SOCKET W/O DIODE	0017-00031-0077	13

* DIODE 1N4004, 400 VOLT, 1 AMP IS USED ON THE LAMP SOCKET. THE PART NUMBER FOR THE DIODE IS 103E-00003-0005.

PLAYFIELD LAMPS

ITEM	DESCRIPTION	PART NUMBER	QTY.
	WEDGE BASE #555: 6.3 VOLT, .25 AMP	0017-00003-0501	92
	WEDGE BASE #912: 12.8 VOLT, 1.0 AMP	0017-00003-0525	8

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SPARE PARTS KIT ASSEMBLY PARTS LIST
PART NUMBER A365-00H07-0016

ITEM	DESCRIPTION	PART NUMBER	QTY.
	FUSE: MDA 3AG, 3 AMP, 250 VOLT, SLO-BLO	0017-00003-0007	1
	FUSE: AGC 3AG, 6 AMP, 32 VOLT, MEDIUM-BLO	0017-00003-0008	1
	FUSE: AGC 3AG, 3/4 AMP, 250 VOLT, FAST-BLO	0017-00003-0010	1
	FUSE: AGC 3AG, 15 AMP, 32 VOLT, MEDIUM-BLO	0017-00003-0011	1
	FUSE: MDL 3AG, 1 AMP, 250 VOLT, SLO-BLO	0017-00003-0103	1
	FUSE: AGX 8AG, 3/16 AMP, 250 VOLT, FAST-BLO	0017-00003-0206	1
	FUSE: AGC 3AG, 3/8 AMP, 250 VOLT, FAST-BLO	0017-00003-0383	1
	FUSE: AGC 3AG, 8 AMP, 32 VOLT, MEDIUM-BLO	0017-00003-0387	1
	FUSE: MDQ 3/4 AMP, 250 VOLT, SLO-BLO	0017-00003-0638	1
	FUSE: GLH 8 AMP, 125 VOLT, SLO-BLO	0017-00003-0652	1
	WEDGE BASE LAMP #555: 6.3 VOLT, .25 AMP	0017-00003-0501	5
	WEDGE BASE LAMP #912: 12.8 VOLT, 1.0 AMP	0017-00003-0525	2
	KEY: LONG-ARM TAMPER RESISTANT	0017-00009-0522	1

GAME PARTS LOCATED IN SPARE PARTS KIT ASSEMBLY

ITEM	DESCRIPTION	PART NUMBER	QTY.
	STEEL BALL: 1-1/16" DIA. (26.9mm)	0017-00009-0709	4
	TILT PLUMB-BOB	0360-00900-0000	1
	HEX HEAD SCREW W/WASHER #8 x 11/16" (17.4mm)	0017-00101-0141	4
*	HEX HEAD BOLT 3/8" X 16 X 4½" (9.5mm X 16 X 114.3mm)	0017-00101-0471	2
	HEX HEAD BOLT 3/8" X 16 X 2-3/8" (9.5mm X 16 X 60.3)	0017-00102-0063	8
	LEG LEVELER BOLT 3/8" X 16 X 2" (9.5mm X 16 X 50.8mm)	0017-00102-0048	4
	HEX NUT: 3/8 " X 16 (9.5mm)	0017-00103-0026	4
*	FLAT STEEL WASHER: .375" I.D., 1.0" O.D., .062" TH.	0017-00104-0050	2

* USED TO ASSEMBLE THE BACKBOX TO THE FRONT CABINET
IN THE UPRIGHT POSITION.

WHEN ORDERING SERVICE PARTS, ORDER BY PART NUMBER ONLY

SECTION 12
TECHNICAL INFORMATION
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TECHNICAL TERMS

The following list of terms are generally standard terms that are used in the industry. However, there are some terms listed here that are commonly used by Bally-Midway. Service Technicians and Operators should note that some terms are used for more than one description. When this occurs, the Technician and Operator need only to be concerned that the term and description is appropriate for the area of concern.

TERM	DESCRIPTION	TERM	DESCRIPTION
A, AD, ADDR	ADDRESS	MNL	MOLEX IN LINE
AG	AMERICAN GAUGE	MTG	MOUNTING
AWG	AMERICAN WIRE GAUGE	MTR	METER
AUX	AUXILIARY	NC	NORMALLY CLOSED
AX	AXIAL	NO	NORMALLY OPEN
B	BASE	O	PHASE
BATT	BATTERY	PB	PUSH BUTTON
BD, BRD	BOARD	PLY, PLYR	PLAYER
BR	BRIDGE RECTIFIER	PWR	POWER
C	CAPACITOR, COLLECTOR, COMMON	PO	PART OF
CER	CERAMIC	Q	OUTPUT, TRANSISTOR
COM	COMMON	R, RES, RM	RESISTOR
CONN	CONNECTOR	RC	RESISTOR CAPACITOR
CP	CAPACITOR	RST	RESET
CPURST	CENTRAL PROCESSING UNIT RESET	RTN	RETURN
CR	DIODE	SHLD	SHIELD
CRBN	CARBON	SND	SOUND
D	DATA, DIODE	SOL	SOLENOID
DAC	DIGITAL TO ANALOG CONVERTER	SPKR	SPEAKER
DEMUX	DEMULTIPLEXER	STBY	STANDBY
DTACK	DATA TRANSFER ACKNOWLEDGE	SW, SWCH	SWITCH
E	EMITTER, ENABLE	T	TRANSFORMER
F, FU	FUSE	TP	TEST POINT
FB	FUSE BOARD, FERRITE BEAD	TY	TIE
FC	FUSE CLIP, FUNCTION CONTROL	U	INTEGRATED CIRCUIT
FF	FLIP FLOP	VA	VARISTOR
FLIP	FLIPPER	VR	VARIABLE RESISTOR
GEN. ILL., G.I.	GENERAL ILLUMINATION	W/MXR	WITH MIXER
HS	HEAT SINK, HIGH SCORE	XING	CROSSING
J	CONNECTOR, PLUG	XSTR	TRANSISTOR
JW	JUMPER WIRE	XTAL	CRYSTAL
K	MECHANICAL RELAY	XU	SOCKET
L	INDUCTOR	Y	CRYSTAL

ESCAPE FROM THE LOST WORLD
COIL & SOLENOID CROSS-REFERENCE LIST

BALLY PART NUMBER	MIDWAY PART NUMBER	# OF LUGS
A-25-500/A-34-4500	A360-00045-0000	3
A-26-1200	A360-00044-0000	2
A-26-1200	A360-00046-0000	2
A-26-1200	A967-00046-0000	2
A-27-1300	A360-00211-0000	2
A-28-1900	AH01-00049-0000	2
G-31-1800	AE35-00058-0000	2

BALLY COIL & SOLENOID PART NUMBER DESCRIPTION

A-26-1200

NUMBER OF TURNS OF WIRE ON BOBBIN

WIRE GAUGE

TYPE OF BOBBIN

MIDWAY COIL & SOLENOID PART NUMBER DESCRIPTION

A967-00046-0000

COIL & TUBING TYPE

SERIES NUMBER

PINBALL GAME FAMILY NUMBER

FINAL GAME ASSEMBLY PART NUMBER LIST

GAME NUMBER	DESCRIPTION
A365-00H07-0001	ALLADINS
A365-00H07-0001	AUSTRALIA
A365-00001-0400	AUSTRIA
A365-00H07-0001	BELGIUM
A365-00H07-0001	CANADA
A365-00H07-0001	DENMARK
A365-00H07-0001	FINLAND
A365-00H07-0001	FRANCE
A365-00001-0400	GERMANY
A365-00H07-0001	HOLLAND
A365-00H07-0001	ITALY
A365-00H07-0001	JAPAN
A365-00H07-0001	NORWAY
A365-00H07-0001	SWEDEN
A365-00H07-0001	SWITZERLAND
A365-00H07-0001	UNITED KINGDOM (U.K.)
A365-00H07-0001	UNITED STATES (U.S.A.)
A365-00H07-0044	UNITED STATES (W/VALID)

LABEL & TAG PART NUMBER LISTING

A. FINAL GAME LABELS & TAGS

PART NUMBER	DESCRIPTION
M051-00H05-A001	GAME CONTROL TAG
M051-00H05-A007	REGISTER SETTING TAG
M051-00049-0000	WARNING LABEL; RED/WHITE
M051-00103-A000	POWER CORD WARNING LABEL
M051-00111-B001	MADE IN THE U.S.A. TAG
M051-00113-0000	FCC CLASS A COMPLIANCE LABEL
M051-00115-A006	PROGRAM LABEL—1988
M051-00134-A000	FBI WARNING STICKER
M051-00365-A020	U.S. PATENT LABEL
M051-00365-A07	GAME BALL QUANTITY LABEL

B. BACK BOX LABELS & TAGS

PART NUMBER	DESCRIPTION
M051-00133-A002	DANGER HIGH VOLTAGE
M051-00133-A008	3 AMP SLO-BLO FUSE TAG
M051-00138-A006	PROGRAM LABEL - 1988
M051-00140-A001	CAUTION HIGH VOLTAGE LABEL
M051-00365-A063	BACK BOX WARNING LABEL
M051-00365-B060	BRIGHT LIGHT FUSE BOARD FUSE TAG

C. PLAYFIELD LABELS & TAGS

PART NUMBER	DESCRIPTION
FORM-00372-8305	PLAYFIELD INSPECTION TAG

APPENDIX

For games containing the MARS ELECTRONICS™ BILL ACCEPTOR, service infomation can be obtained from MARS ELECTRONICS.

FOR SERVICE CONTACT:

MARS ELECTRONICS
MONEY SYSTEMS DIVISION
WESTCHESTER, PENNSYLVANIA 19380

PHONE: (215)-430-2500 - PENNSYLVANIA
(800)-345-8172 - TOLL FREE

Bally
MIDWAY™

BLACKWATER 100™